

H  
8522  
NT  
July 2001

ISSN 0952-7583

Vol. 14, Part 2

# BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY



# BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY

Published by the British Entomological and Natural History Society  
and incorporating its Proceedings and Transactions

**Editor:** M. Wilson, Ph.D., F.R.E.S., F.L.S. Department of Biodiversity & Systematic Biology, National Museums & Galleries of Wales, Cardiff CF10 3NP. (Tel: 02920 573263, Fax: 02920 239829) email: Mike.Wilson@nmgw.ac.uk

**Associate Editor:** Richard A. Jones, B.Sc., F.R.E.S., F.L.S. 135 Friern Road, East Dulwich, London SE22 0AZ.

## *Editorial Committee:*

D. J. L. Agassiz, M.A., Ph.D., F.R.E.S.	T. G. Howarth, B.E.M., F.R.E.S.
R. D. G. Barrington, B.Sc.	I. F. G. McLean, Ph.D., F.R.E.S.
P. J. Chandler, B.Sc., F.R.E.S.	M. J. Simmons, M.Sc.
B. Goater, B.Sc., M.I.Biol.	P. A. Sokoloff, M.Sc., C.Biol., M.I.Biol., F.R.E.S.
A. J. Halstead, M.Sc., F.R.E.S.	T. R. E. Southwood, K.B., D.Sc., F.R.E.S.
R. D. Hawkins, M.A.	R. W. J. Uffen, M.Sc., F.R.E.S.
P. J. Hodge	B. K. West, B.Ed.

*British Journal of Entomology and Natural History* is published by the British Entomological and Natural History Society, Dinton Pastures Country Park, Davis Street, Hurst, Reading, Berkshire RG10 0TH, UK. Tel: 01189-321402. The Journal is distributed free to BENHS members.

© 2001 British Entomological and Natural History Society.

Typeset by Dobbie Typesetting Limited, Tavistock, Devon.

Printed in England by Henry Ling Ltd, Dorchester, Dorset.

## BRITISH ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY

**Registered charity number: 213149**

Meetings of the Society are held regularly in London, at the rooms of the Royal Entomological Society, 41 Queen's Gate, London SW7 and the well-known ANNUAL EXHIBITION is planned for Saturday 10 November 2001 at Imperial College, London SW7. Frequent Field Meetings are held at weekends in the summer. Visitors are welcome at all meetings. The current Programme Card can be had on application to the Secretary, J. Muggleton, at the address given below.

The Society maintains a library, and collections at its headquarters in Dinton Pastures, which are open to members on various advertised days each month, telephone 01189-321402 for the latest meeting news. The Society's web site is: <http://www.BENHS.org.uk>

**Applications for membership to the Membership Secretary:** A. Godfrey, 90 Bence Lane, Darton, Barnsley, South Yorkshire S75 5DA.

**Subscriptions and changes of address to the Membership Secretary:** R. D. Hawkins, 30d Meadowcroft Close, Horley, Surrey RH6 9EL.

**Non-arrival of the Journal,** faulty copies or other problems arising from distribution of the Journal or notices to the **Distribution Secretary:** D. Young, Graylings, School Road, Tunstall, Woodbridge, Suffolk IP12 2JQ. Tel: 01728 688992.

**Orders for books and back numbers of the Journal and Proceedings to the Sales Secretary:** G. Boyd, 91 Fullingdale Road, Northampton NN3 2PZ. Tel: 01604 410056.

**General Enquiries to the Secretary:** J. Muggleton, 30 Penton Road, Staines, Middlesex TW18 2LD. Tel: 01784-464537. email: [jmuggleton@compuserve.com](mailto:jmuggleton@compuserve.com)

Cover illustration: Larvae, pupae and lone adult worker of *Mymica* sp. (Hymenoptera: Formicidae) photo: Richard Jones

**NOTE:** The Editor invites submission of photographs for black and white reproduction on the front covers of the journal. The subject matter is open, with an emphasis on aesthetic value rather than scientific novelty. Submissions can be in the form of colour or black and white prints or colour transparencies.



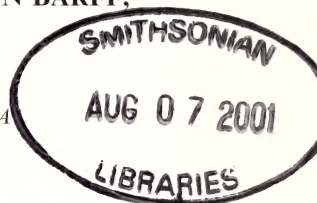
# THE DIPTERA, COLEOPTERA AND OTHER INVERTEBRATES RECORDED FROM OAK SAP-FLOWS AT BRAYTON BARFF, NORTH YORKSHIRE

ANDY GODFREY

90 Bence Lane, Darton, Barnsley, South Yorkshire S75 5DA

PAUL F. WHITEHEAD

Moor Leys, Little Comberton, Pershore, Worcestershire WR10 3EH



**Abstract.** From 1996 to 2000 a study was made of insects, particularly Diptera and Coleoptera, attracted to sap-flows on two mature pedunculate oaks (*Quercus robur* L.) at Brayton Barff in the modern county of North Yorkshire (VC 61). Several sap-flows were present on each of two trees from July to mid-August and these attracted large numbers of Diptera, Coleoptera and Hymenoptera, together with smaller numbers of Lepidoptera. Over 60 species of Diptera and 26 species of Coleoptera were recorded. Of particular interest was the occurrence of a number of rare, scarce, or stenotopic species characteristic either of sap-flows or diseased trees generally. The Diptera include *Odinia maculata* (Mg.), *O. meijerei* Collin, *Periscelis annulata* (Fall.), *Amiota alboguttata* (Wahlberg), *A. basdeni* Fonseca, *Fiebrigella brevivucca* (Duda), and the Coleoptera, *Soronia grisea* (L.), *Thalycra fervida* (Ol.), *Cryptarcha strigata* (Fab.) and *Cryptarcha undata* (Ol.). It is apparent from this study that trees producing sap-flows attract species other than those dependent on sap itself for their development since several Diptera families and species, not previously associated with sap-flows, are recorded apparently for the first time from this microhabitat. Only a very few of the species recorded are considered to be insect tourists (in the sense that they have no association with the sap-flows). The interesting species recorded from the other insect groups present include the yellow-legged clearwing moth *Synanthedon vespiformis* L. and the hornet *Vespa crabro* L. both of which are scarce in Yorkshire. Comparisons are made with previous studies on sap-flows, the ecology of the species recorded is discussed and implications for habitat management are discussed.

## INTRODUCTION

Sap-flows (also known as sap-runs or slime-fluxes) comprise the exudations or liquid ooze that appears on trunks of trees, emanating from openings in the bark. The cause of sap-flows varies but usually involves bacterial infection and is a well-known phenomenon in some species such as the bacterial wetwood in elm *Ulmus* sp. and horse chestnut *Aesculus hippocastanum* L. (Risbeth 1982). Various workers have mentioned the occurrence of different types of sap-flows characterised by colour and other features (for example, Ogilvie, 1924 and Fox-Wilson, 1926). Those on elm *Ulmus* sp. and horse chestnut *Aesculus hippocastanum* are normally described as brown sap-flows and many of the observations of insects on sap relate to these. Brown sap-flows originate from the heart sap wood. On reaching the surface the clear nutrient-enriched liquid turns brown due to feeding by fungi, bacteria and insects (Brown, 1999). White sap-flows represent another type and according to Fox-Wilson (1926) these occur on a wide variety of trees including ash, beech, birch, maple, oak, poplar and willow. The white, frothy sap-flows at Brayton Barff, sometimes smelling strongly of vinegar, fit the description of white slime-flux in Ogilvie (1924) on grounds of colour, smell and tree

species. White sap-flows are alcoholic according to various workers and develop in the bark and sap wood. This type of sap is rich in starches, sugars and proteins and therefore provides ideal conditions for the growth of bacteria (Brown, 1999). Ogilvie (1924) states that this is associated with branch scars, frost-cracks, goat moth (*Cossus cossus* L.) larval borings and other wounds, but that it may also arise from uninjured bark. PFW has observed identical fluxes on oak, *Quercus robur* L., in Herefordshire, following crown fragmentation. The invertebrate fauna associated with brown sap-flows and white sap-flows differs greatly with each characterised by different and distinct suites of insects, with only the white sap-flows covered in this paper.

The invertebrates associated with major white sap-flows on two pedunculate oak trees at Brayton Barff, North Yorkshire are described in this study. These sap-flows were noted during an entomological visit by Ken and Rita Merrifield and the first author was informed of these later that day. A visit was subsequently made which confirmed the unusual extent of the sap-flows with two trees each with circa 15–20 points of sap emanation with a large number of attendant wasps, Diptera and with Coleoptera also obvious. Subsequently, regular visits were made throughout the main period of sap-flow (July–August) over the next three years to record the invertebrates present. The large number of sap-flows, abundance of insect visitors and the fact that these were very obvious even to members of the public, is extraordinary in the first author's experience.

Sap-flows are often cited as an important microhabitat for saproxylic insects (Stubbs, 1972; Key, 1996; Read, 2000). However, observations relating to insects or other invertebrates are infrequent and there are very few detailed accounts in the published literature, even at a world-level. Also, it is clear that a number of specialised saproxylic taxa are closely associated with sap-flows. It is also very clear that saproxylic habitats as a whole represent the most important habitat for rare and uncommon species in Britain (and probably in Europe). It has been suggested that as many as a fifth of all European species of Diptera and Coleoptera are associated with dead wood at some stage of their life-cycles (McLean and Speight, 1993). Furthermore, saproxylic species have been identified as the most threatened community of invertebrates (Read, 2000).

#### STUDY SITE

Brayton Barff is a low wooded hill, with a waymarked nature trail (Anon., 1981), lying adjacent to the village of Brayton, some 4km south-south-west of Selby, in the southern part of the Vale of York. It is one of only two such hills in the area which form obvious features in an otherwise flat landscape. The term "Barff," or "Bargh," signifies a hill or mound.

#### DESCRIPTION OF THE TREES

The sap-flows examined are on two trees, one (Tree 1) in the centre of what is now a public car park (SE587307), the other (Tree 2) about 400 m distant to the southwest (SE583304). The majority of insect records originate from Tree 1, which divides from the base into three trunks each bearing several large excrescences between ground level and a height of 1.5 m. The sap-flows originate from these excrescences. Tree 2 is rather similar in structure, dividing into four trunks low down, but in this case the excrescences are not as frequent or as well-developed. The low forking nature of the trunks renders girth measurements of limited value.

Fox-Wilson (1926) referred to an oak tree at Wisley in Surrey, showing features very similar to these trees. Other very noticeable excrescent oak trees occur on



Brayton Barff, a few revealing minor sap-flows with attendant *Drosophila*, but no other trees quite like the two described have been encountered at the site. However, members of the public have described other trees at Brayton Barff with large numbers of wasps and flies attracted to them.

Members of the public have confirmed that Tree 1 produces sap-flows perennially, from mid-May until the end of August, but is in greatest evidence in a narrow period from July to early August. The influence of weather on sap-flows was discussed by Fox-Wilson (1926) who found that the sap flow-rate decreased in hot weather. Observations of sap-flow in relation to meteorological conditions have not been made in this study. A further factor that may affect the condition of the trees at Brayton Barff is the proximity of a borehole and pumping station.

## METHODS

Sampling was by active searching, insects being taken directly from the sap-flows or bark by a tube or pooter. Although quantitative sampling techniques can be applied to tree boles (Kaila, 1993) they tend to eradicate very large numbers of invertebrates, some of which only occur at low frequencies and often result in damage or destruction to the habitat. The collection of larvae or pupae for rearing may well have added to the total number of species recorded, but would have subjected the trees to further damage, which we were keen to avoid. The location of the trees in public areas also precluded the use of trapping methods.

## PREVIOUS STUDIES

Several general studies of insects associated with sap runs are summarised below. Within the Diptera there also exists an extensive literature on individual families, genera and species particularly pertaining to *Drosophilidae*.

Study	Tree species	Cause of sap-flows
Christy (1921), Nicolson (1921)	<i>Ulmus glabra</i> Huds.	? <i>Cossus</i> . Internal stress
Fox-Wilson (1926)	oak	healthy tree, uninjured bark
Keilin (1927)	<i>Aesculus hippocastanum</i>	human damage
Shillito (1947)	<i>Ulmus glabra</i>	Dutch Elm disease
Assis-Fonseca (1952)	oak	<i>Cossus</i> damage
Uffen (1962)	elm	?human damage
Cole and Streams (1970)	elms	bacterial wetwood
	<i>Quercus velutina</i> Lam.	not specified
Chandler (1973)	<i>Ulmus procera</i> Salisb.	not specified [?Dutch Elm disease]
Ratti (1978)	<i>Quercus robur</i>	frost, mechanical, and <i>Cossus</i> damage
Lyszkowski et al (1990)	<i>Quercus robur</i>	<i>Cossus</i> damage
	<i>Quercus cerris</i> L.	<i>Cossus</i> damage
	<i>Quercus</i> sp.	?windfall damage
	<i>Populus tremula</i> L.	not specified
MacGowan (1993)	<i>Populus tremula</i>	?wind stress
Whitehead (1996)	<i>Quercus cerris</i>	<i>Cossus</i> damage
Whitehead (pers. obs.)	<i>Quercus robur</i>	major crown breakup
Waterhouse (1998)	<i>Acer pseudoplatanus</i>	grazing damage to coppice stems

## RESULTS

A list of the invertebrates recorded is provided as Appendix 1.

### Diptera

The fauna may be discussed in relation to published information. *Sylvicola punctatus* (Fab.) and other species of *Sylvicola* have been recorded from sap-flows, rot-holes and a wide variety of other saproxylic and non-saproxylic microhabitats (Fox-Wilson, 1926; Keilin, 1927; Cole and Streams, 1970; MacGowan, 1993). Sciarids are very frequent in deadwood situations under bark and in decomposing sapwood (for example, Mohrig, Krivosheina and Mamaev, 1979). Apart from *Sylvicola punctatus* (Fab.), the scatopsid *Coboldia fuscipes* (Mg.) was the only other frequent nematoceran on the Brayton Barff trees. The Scatopsidae are known to comprise several species that utilise rot-holes or other deadwood habitats and Haenni and Vaillant (1994) provide an account of these. According to them, *Coboldia fuscipes* has been reared from a variety of pabula including a large number of species of fungi. Cole and Streams (1970) recorded *Scatopse fuscipes* Mg. from flux that contained detritus.

*Drapetis* larvae have been reared from under bark and in rotting tree stumps and adults may be found running on tree trunks (Collin, 1961; Teskey, 1976). *Platypalpus* larvae have been reared from a well-decayed hickory stump and from spruce, and have also been found in soil under moss in a wood (Teskey, 1976; Smith, 1989). Several others have been reported from damp earth, humus and beneath fallen leaves (Teskey, 1976). Only one (unidentified) phorid was taken. It is likely that some of the sap-associated beetles and flies on the Brayton Barff trees provide suitable hosts for parasitic phorids. Single examples of the common hoverflies *Episyrphus balteatus* (DeGeer) and *Meliscaeva cinctella* (Zett.) were taken and may have been attracted to the sap although AG is not aware of other records of Syrphini attracted to this medium. *Ferdinandea cuprea* (Scop.) however, is a well-known sap specialist (Smith, 1989; Lyszkowski *et al.*, 1990; Rotheray, 1993); larvae were also found in the sap-flows on several occasions and a specimen was reared from a pupa found on the bark.

*Leucopis* is perhaps, a surprising genus to find in association with sap-flows. Several females were taken from the bark of Tree 1 on different dates. Certain *Leucopis* are predators of scale insects, aphids, adelgids and mealy bugs on trees, and their presence here may be due to the fact that Tree 1 is subject to stress and this has provided opportunities for Homoptera to exploit the tree along with their chamaemyiid predators. Several species of *Leucopis* are associated with trees in Europe, Russia and North America including *Ulmus*, *Populus* and *Pinus* (Sluss and Foote, 1973; Teskey, 1976). The lonchaeid *Setisquamalonchaea fumosa* (Egger) is a common species found in a wide variety of habitats, having been reared for example, from root vegetables and stems of Apiaceae (Smith, 1989). Its occurrence here may be due to chance.

There appear to be no previous records of dryomyzids, piophilids and carnids associated with sap-flows although the precise woody microhabitat from which Andersson (1999) recorded *Meonura neottiophila* has not been deduced. These are normally regarded as scavenging species, along with certain sphaerocerids, calliphorids, sarcophagids and several muscids, all of which had representatives at Brayton Barff. The abundance of these carrion-feeders on sap has been noted previously (Shillito, 1947). *Mycetaulus bipunctatus* (Fall.) larvae live in rotting fungi, decaying wood, birds nests and probably in dead animals (Zuska and Lastovka, 1965; Ferrar, 1987). *Meonura neottiophila* Collin was not observed on the sap itself but was frequent on bark near the base of Tree 1. They may have been utilising the corpses of



*Glischrochilus hortensis* (Fourc.) and *Paravespula* from the ground beneath the tree or from the tree itself. They are certainly not associated here with birds' nests or fungi, from which they have been bred in the past. The Swedish term 'kadaverflugor' used by Andersson (1999) for this family would appear to agree well with these observations.

*Coproica vagans* (Hal.) has been recorded from decaying fungi although they are not thought to be true fungus feeders (Chandler 1990). *Coproica hirtula* (Rondani) and *Spelobia bifrons* (Stenhammer) have similarly been reported from a range of decomposing materials. Richards (1930) recorded *Sphaerocera curvipes* Latreille from the fermented sap of a recently felled oak tree whilst Assis-Fonseca (1952) recorded *Opacifrons coxata* (Stenhammer) on *Cossus* oak. They are occasionally reported from other deadwood situations but they are probably more closely associated with wood-decaying fungi than with wood itself. Odiiniids are generally associated with wounded, dying or dead trees and are rarely encountered with the exception of the local *Odinia boletina* (Zett.) (Collin, 1952). *Odinia maculata* has been found on oak infested with *Cossus* larvae and in Windsor Forest in association with the buprestid beetle *Agilus biguttatus* (Fab.). *Odinia mejerei* which was locally not uncommon on elms when Dutch Elm disease was at its height, has been reared from elm logs (Pechuman, 1937) and from hickory and tulip tree infested with beetles and moths (Ferrar, 1987) and larvae are reported from the tunnels of *Scolytus* on diseased elm. *Odinia mejerei* has also recently been recorded as a parasitoid of the Leopard moth (*Zeuzera pyrina* L., Lepidoptera, Cossidae) (Campadelli, 1995). *O. boletina* develops in bracket fungi (Benson and Walker, 1973; Lewis, 1979; Chandler, 1986; Allen, 1987) although puparia have been found in larval moth borings in walnut twigs in Japan (Ferrar, 1987).

Periscelids are almost always confined to "bleeding" trees and are rarely encountered, even by experienced entomologists. Papp (1988, 1995, 1998) has provided accounts of the larval stages and life habits including that of *P. annulata*, and found larvae in the oozing sap of *Ulmus*. This species was added to the British list from a specimen taken from a sap-flow on beech (*Fagus*) in the New Forest (Lamb, 1904). It has recently been reared from wych elm (*Ulmus glabra*) attacked by Dutch elm disease and *Scolytus laevis* Chapuis (Col., Scolytidae) (Rognes and Hansen, 1996). The drosophilids are amongst the most frequently reported Diptera at sap-flows and the rarely-recorded *Amiota* are virtually restricted to them. *Amiota basdeni* has been recorded on only four occasions in Britain, all from the southeast (Falk and Ismay, in prep.); the Brayton specimens therefore constitute a significant range-extension. One of the existing records is from fallen beech trunks. *Amiota alboguttata* has been reared from the fungus *Daldinia concentrica* (Fries) Cesati et de Notaris (Basden, 1954; Maca, 1980; Smith, 1989; Falk and Ismay *ibid*). Trapping by Basden near Edinburgh in 1952 produced only one *A. alboguttata* below a height of 8.5 m, whilst large numbers occurred between 8.5 and 16 m. The possible significance of this is discussed below. In 1996 *Drosophila subobscura* Collin was the most abundant species at Brayton Barff whilst *D. tristis* Fall., increased considerably during 1997 when the sap flows were less pronounced. Whether this is significant is not clear. *D. tristis* Fall. was recorded by Assis-Fonseca (1952) from *Cossus*-infested oak. *Drosophila busckii* Coq. and *D. hydei* Sturt. were only taken occasionally on the Brayton sap flows. *D. subobscura* Collin has been recorded on slime-fluxes on a variety of trees including *Abies*, *Acer pseudoplatanus*, *Betula*, *Populus*, *Salix*, and diseased *Ulmus* (Basden, 1954; Carson *et al.*, 1981; Shillito, 1947). *Drosophila melanogaster* Mg. proved to be the most frequent drosophilid on the sap runs in 1998. This species is normally associated with fungi and we have been unable to locate records from sap. *Drosophila immigrans* Sturtevant however, has been reported from

sap (Kimura *et al.*, 1977; Stubbs and Chandler, 1978). Several other species observed on slime-fluxes are mentioned in the literature, for example by Assis-Fonseca (1952), Cole & Streams (1970), Teskey (1976), Kimura *et al.* (1977), Carson *et al.* (1981), Ferrar (1987), Smith (1989) and Papp *et al.* (1999). E. B. Basden, carried out a study of drosophilids on sap in Scotland (Basden, 1954).

Few chloropids are associated with decaying or damaged wood. The few published British records of species of *Fiebrigella* are from ancient woodlands and parklands. AG has reared *Fiebrigella brevibucca* from sappy bark from Moccas Park National Nature Reserve (Godfrey, 1998, 2000) and Collin (1946) reared *F. baliola* Collin from material taken from a wounded elm tree. Imagines of *F. brevibucca* have been recorded from the exposed heartwood of beech (*Fagus*) infested by the ant *Lasius brunneus* (Latreille), around sap-flows and at rot-holes in oak. It has also been taken by insecticidal fogging of the oak canopy at Wytham Wood (Falk and Ismay, in prep.).

A single tachinid *Phytomytera cingulata* (R.-D.) was taken. This species is widespread and mainly parasitises microlepidoptera larvae in rotting wood, fungi or lichens (Belshaw, 1993). Parson (1995) recently recorded it from a standing beech. The calliphorids and sarcophagids recorded comprise common carrion-feeding species, as previously mentioned. Fox-Wilson (1926), Shillito (1947) and Assis-Fonseca (1952) reported several in their studies. Anthomyiids found at Brayton Barff comprise common species which is also true for most of the Fanniidae and Muscidae. One exception is *Fannia aequilineata* Ringdahl, a species reared from a blackbird's nest, wood debris and fungi and one that is strongly attracted to exudates from damaged trees, especially *Cossus* trees (Assis-Fonseca, 1968; Parson, 1995). The other exception is the local *Helina pertusa* (Mg.) which is the only Palaearctic *Helina* associated exclusively with dying or damaged trees. The larvae develop behind loose bark preying upon ceratopogonid, mycetophilid, sciarid, lonchaeid and clusiid larvae. According to Skidmore (1985), it generally favours drier wood than many of the deadwood *Phaonia* species and has been recorded from *Ulmus*, *Fagus* and *Quercus* most frequently. Imagines are infrequently seen since they inhabit shady parts of woodlands where they visit sap-flows or settle on sunlit tree trunks. A single male *Hydrotaea armipes* (Fall.) was reared from sap taken from Tree 1 in 1998. This species develops in a wide range of media including rotting grass, fungi, birds' nests, a sheep carcase, dead snails, compost and rotting seaweed (Skidmore, 1985). This genus is not one normally associated with sap exudations. The common yellow muscid *Thricops diaphanus* (Weideman) has been reared from moss on a rotten oak log and from tree fungi (Buxton, 1960; Chandler, 1973; Skidmore, 1985).

### Coleoptera

The fauna is characteristic of oak exudates, but includes a number of generalist species associated with decomposing organic matter in general. The staphylinids *Anotylus tetracarinus* (Blk.), *Xanthonomus longiventris* Heer, *Philonthus nigriventris* Th., *Atheta amicula* (Ste.), *A. trinotata* (Kr.), *A. coriaria* (Kr.), and *A. triangulum* (Kr.) fall into this group. *Philonthus nigriventris* Th. is generally localised and sporadic in Britain, in the experience of PFW usually being noted singly, in decomposing matter of both plant and animal origin. In England, there is some affinity with wooded areas, the species having been noted overwintering in woodland litter. There are only some 6 previous records for VC 61. *Atheta crassicornis* (Fab.) is widespread as an arboreal species, with a strong affinity for basidiomycete fungi.

The elaterid *Hemicrepidius hirtus* (Hbst) has a widespread scattered distribution in the British Isles (Mendel and Clarke, 1996), but is usually encountered singly or in



small numbers. The larvae are associated with tree decay processes. The occurrence of the anobiid *Stegobium paniceum* (L.) is of some interest. This is a cosmopolitan synanthropic species, a map of its British distribution revealing the location of many of our major settlements. The natural habitat of this species is a matter of speculation, but the finding at Brayton Barff may provide a clue; the larvae prefer a diet high in carbohydrates. Analysis of oak slime-flux (Fox-Wilson, 1926) confirmed the expected presence of translocated sugars, which are acceptable to *Stegobium paniceum*, but which apparently do not allow the species to reach "outbreak" proportions. According to Español (1992) *S. paniceum* is "rara en pleno campo" a situation which also pertains in Britain. There is a record by M. L. Denton from Dean Wood, Yorkshire, on 25.11.1983 (*teste* R. J. Marsh).

The nitidulids have similar dietary requirements (Kirk-Spriggs, 1991), many species being positively chemotropic, homing in rapidly on sources of fermenting carbohydrates. A Nearctic species, *Glischrochilus quadrisignatus* (Say) has become known as the picnic beetle in consequence, whilst many nitidulids, such as *Carpophilus sexpustulatus* (Fab.), less generally synanthropic, assemble very rapidly at the freshly exposed sap of fallen live forest trees. *Carpophilus marginellus* Mots., a synanthropic species frequently entering human habitation, was recognised breeding in flux-saturated soil at the base of Turkey oak (*Quercus cerris*) in Worcestershire (Whitehead 1996), whilst Ratti (1978) recorded *C. marginellus* new to Italy in association with *Cossus*-flux on *Quercus robur*. *Carpophilus marginellus* was first recorded in Yorkshire in 1952, with no further records for a further 17 years; recently it has become more widespread (*teste* R. J. Marsh). The larvae of *C. marginellus* appear to require moist niches.

*Thalycra fervida* is believed to be associated with hypogean fungi of the genus *Rhizopogon* (Kirk-Spriggs, 1996) but the bionomics remain little-known. There are a number of English records at *Cossus*-flux, but only one other Yorkshire and vice-county record, in a light-trap at Cawood (SE53) on 26.8.1990. *Cryptarcha strigata* and *C. undata* are both very strongly associated with sap-flows and *Cossus*-flux (Alexander, 1991; Atty, 1983; Fowler, 1889; Kirk-Spriggs, 1991), but are rare in the north-east of England, *C. undata* here being new to the region. There are two previous Yorkshire records of *C. strigata*, in 1910 and 1986 (*teste* R. J. Marsh). *Soronia grisea* (L.), represented in 1996 by 3 imagines and larvae, is widely scattered in Britain, frequently associated with willow in carr woodland, especially on trees colonised by the fungus *Daedaleopsis confragosa* (Bolton ex Fries) J. Schroet., and overwinters as an imago under bark. There are numerous records for Yorkshire, with a good concentration in the vice-county. *Soronia punctatissima* (Illiger) is also local and is found on flowers as well as on sap-flows.

The weevil *Euophryum confine* (Broun) is a New Zealand species which was unknown in England prior to 1937 and it is now widespread throughout the British Isles (Thompson, 1989; Whitehead, 1992a), colonising both living and processed wood (Hum *et al.*, 1980; Read, 1984; Read, 1991).

### Other invertebrates

Large numbers of mites were found amongst sap and drosophilid pupae taken from the sap-flows. AG has previously also found large numbers of mites in horse chestnut sap at Powis Castle Park, Wales and elsewhere. Mites of the genera *Hericia*, *Fusohericia*, *Histiostoma* and *Sellea* prefer fermenting sap (O'Connor, 1994), whilst *Hericia hericia* Kramer was studied on brown slime-fluxes by Robinson (1953). Only one example of the psocid *Trichadenotecnum sexpunctatum* (L.), a localised bark

frequenter, was observed; this is almost certainly an insect tourist. A frequent visitor to the sap was the Red Admiral butterfly (*Vanessa atalanta* L.), one or two of which were present on most visits to Tree 1; this species is well known for its attraction to fermenting carbohydrates (Christy, 1921). Three species of noctuids were found during the day at rest on the trunk of Tree 1. *Acrionicta tridens* (D. et S.) and *Oligia versicolor* (Bork.) are both rather thinly scattered in England and Wales, the latter extending to the Scottish lowlands. The larvae of *A. tridens* (D. et S.) feed on woody Rosaceae, whilst *Apamaea monoglypha* (Hufn.) is widespread in Britain, frequently coming to sugar patches, the larvae feeding on Poaceae. A yellow-legged clearwing *Synanthedon vespiformis* L. with partially expanded wings was taken on the bark in 1998. This species is usually associated with *Quercus* although it may also use other tree species. Various sources (e.g. Heath and Emmet, 1985) mention that oviposition may take place in cankerous swellings or excrescences on trunks which are very evident on the trees discussed here.

An especially striking feature was the large number of vespid wasps present, to the extent that a member of the public suggested that they were nesting (in Tree 1). The wasps congregated on the bark around the points of exudation, behaviour which is regarded as typical (Gullan and Cranston, 1994; Whitehead, 1992b; Wilson, 1971). At any one time up to 10 wasps were observed around the 10 to 15 sap exudation points on Tree 1, together with others at rest on the bark, or in slow flight around the tree. As previously noted, the ground around the tree was littered with the corpses of dead wasps. Individual hornets *Vespa crabro* were seen in August and September 2000 on the sap-flows on Tree 1. The individual in August was active and readily took flight whereas the later individual was reluctant to move from one of the few remaining sap emanations and aggressively defended its position. A recently dead wasp in two parts was found on the latter occasion lying next to the hornet and had almost certainly been bitten in two by its larger relative. The hornet is a rare species in Yorkshire with nine previous records (only four since 1970) although it appears to be spreading northwards (Archer, 1998). Few examples of the pompilid *Dipogon subintermedius* (Magretti) were seen. Archer (1989) states that this is encountered only occasionally in Yorkshire and nests in walls, bramble stems and old insect borings in dead wood in sunny, sheltered locations. It has a scattered distribution in England, with a strong affinity for spiders of mature timber habitat or pasture-woodland.

Parasitic Hymenoptera of several species were frequently found flying closely above the tree bark. Those identified are the ichneumons *Liotryphon crassisetus* (Thompson) which is usually a parasitoid of Sesiidae but may attack other Lepidoptera such as leopard moth (*Zeuzera pyrina*) in wood, and *Rhembobius praescrutator* a common parasitoid of hoverfly puparia recorded from around rot-holes (Dr Mark Shaw pers. comm.). Chalcids of the genus *Lissonota* are also parasitoids of microlepidoptera whilst *Calosota* species possibly parasitise xylophagous beetles (Dr Mark Shaw pers. comm.). *Pachycyrtopoeus vindemiae* (Rondani) is a metallic chalcid which is a pupal parasite of Diptera including species of Piophilidae, Drosophilidae, Calliphoridae and Muscidae all of which are well represented at Brayton Barff.

## DISCUSSION

### Sap-flows

Explanations for the sap-flows at Brayton Barff remain somewhat obscure. The seeping oak tree described by Fox-Wilson (1926) is a very close analogue; this was



thought to be otherwise healthy. No primary evidence for *Cossus* damage was observed on the trees at Brayton Barff, and the characteristic visible points of rupture of live vascular tissue cut by the larvae were not observed; (the goat moth (*Cossus cossus* L. is also very rare in Yorkshire, according to Sutton & Beaumont, 1989). Excrescences are genotypic features (Longman & Coutts, 1974) reflecting the ability of some oak trees to produce dormant bud-clusters in which large numbers, rather than one or a few, suppressed epicormic shoots may impact on the integrity of the cylinders of cambial, phloem and xylem tissues enclosing the primary trunkwood. At these points there may be physical disruption of the cambial tissues, or access points for bacteria; in North America species of *Erwinia* may produce similar fluxes (Bradbury, 1986), providing opportunities for the fermentation of translocated sugars.

There is a real possibility that both the trees may be under physiological stress resulting from soil compaction and physical damage by members of the public. Soil compaction can be a serious problem in public car parks (Alexander *et al.*, 1996) resulting in damage to roots and their associated fungal mycorrhizal communities resulting in premature death of trees. Tree 1 is also enticing for children to climb on because it is divided low down into three trunks. Tree 2 may similarly be suffering from soil compaction and physical damage to exposed roots which are exposed on the regularly used footpath. There may also be subsidiary problems in terms of surface run-off not penetrating the compacted soils and competition from surrounding trees particularly tall conifers planted around the perimeter of the car park. It could be that water abstraction from the borehole on the Barff affects the water supply to the trees, acting sporadically as a stress factor and recent hot summers may also have exacerbated the problem.

### Diptera

A total of 62 taxa have been recorded at Brayton Barff either directly on the sap or elsewhere on the trunks of the tree. This compares with 40 species recorded by Waterhouse (1998), 33+ by Assis-Fonseca, 23 by Shillito (1947), 20+ by Fox-Wilson (1926), 17 by Cole & Streams (1970), 6 by MacGowan (1993), 4 by Keilin (1927), 3 by Uffen (1962) and 3 by Lyszkowski *et al.* (1990). Both Chandler (1973) and Andersson (1999) also recorded several from sap, heartwood, fungi and associated microhabitats on decaying elm and from various tree species in old parkland respectively. These data show how species-rich the Brayton Barff sap-flows are and how detailed observation can reveal larger faunas. Other recent work by the Malloch Society has revealed the high incidence of rare Diptera species associated with sap-flows (Rotheray *et al.*, in press). The present study confirms that different tree species and different causal processes attract different suites of species. The fauna of the white slime-flux at Brayton Barff is dominated by drosophilids and calyptrates, with very few Nematocera. The fauna therefore bears most resemblance to that of Fox-Wilson (1926) and, as stated above, the description of that tree could equally apply to the Brayton Barff trees. Assis-Fonseca's fauna on a goat moth (*Cossus cossus* L.) damaged tree was also characterised by calyptrates with several species of drosophilids present. However, the rare (but widespread) muscids described by him and reported elsewhere on *Cossus* trees were not found at Brayton Barff although the infrequent *Fannia aequilineata* and *Helina pertusa* proved to be regular visitors. Families more typical of the brown slime-fluxes on horse chestnut (*Aesculus hippocastanum*) and elm (*Ulmus* spp.) sap tend to be dominated by Nematocera (such as Ceratopogonidae, Psychodidae, *Mycetobia*, *Sylvicola* and to a

lesser extent, Limoniidae) and certain other taxa (especially *Systemus*, *Brachyopa* and *Aulacigaster*) (Cole and Streams, 1970; AG pers. obs.). The fauna associated with aspen (*Populus tremula*) sap and associated microhabitats in northern regions also appears distinct (Yerbury: unpublished diaries; MacGowan, 1993; Siitonen and Martikainen, 1994; Ahnlund, 1996).

Also absent from the trees are a number of other common Diptera recorded from deadwood situations such as *Medetera* (Dolichopodidae) and *Lonchaea* (Lonchaeidae) and clusiids. The latter may be associated with more advanced decay in partly decorticated trees. Further recording may add these, as well as other saproxylic Diptera. What is also surprising is the absence of any of the rarer muscids, like *Phaonia* and *Potamia* species, that are attracted to sap or develop in other deadwood habitats such as *Phaonia canescens* Stein, *P. gobertii* Mik, *P. laeta* (Fall.), *P. pratensis* (R.-D.) or *Potamia querceti* (see Collin, 1951). Several of these species have been bred by the first author from elsewhere in the north of England and North Midlands so that their absence would not appear to be based on absence in this part of the country. There are no obvious fungi on the trees despite the fact that several Diptera recorded have been closely associated with or reared from fungi (for example, *Coboldia fuscipes*, *Mycetaulus bipunctatus*, *Odinia boletina* and *Thricops diaphanus*). These may be occupying other niches or using fungi under bark, at height or otherwise hidden from view although the latter is probably a visitor to the sap.

As previously mentioned, two of the rare species (*Amiota alboguttata* and *Fiebrigella brevivucca*) have been taken at height in trees. It has been suggested that these or other rarely encountered species may normally live within tree canopies, but they are also inconspicuous, often require specialised methods to detect them, and are restricted to localised microhabitats. They probably rarely venture far from where they developed, which may also explain the paucity of records.

Chamaemyiids of the genus *Leucopis* are generally uncommon and extremely unlikely to be encountered in small numbers on bark by chance. For this reason they can be excluded as insect tourists. They are probably predatory on homopterans taking advantage of the stressed tree and as such are symptomatic of an unhealthy tree. The only genuine insect tourists are probably the earwig *Forficula auricularia* and the hoverflies *Episyrphus balteatus* and *Meliscaeva cinctella*, both of which were encountered as singletons on the trunk of Tree 1, and possibly the psocid *Trichadenotecnum sexpunctatum*. Other groups such as the Calyptrates may include tourists but also include species restricted to or preferentially found in saproxylic microhabitats.

It is apparent from this study that trees producing sap-flows attract species other than those dependent on sap itself for their development. An important group are those that are parasitic on wood-boring beetles such as the odiniids, some of which are also thought to be saprophagous in beetle burrows feeding on frass or dead beetles. The numerous dead *Glischrochilus hortensis* and vespids wasps may also afford suitable developmental media for parasitoids. It appears that some of the odiniids may not be restricted to one host or genus, i.e. *Odinia meijerei* on *Scolytus* in *Ulmus* or *O. maculata* on *Cossus*, but may use a range of wood-consuming Lepidoptera or Coleoptera.

### Coleoptera

Coleoptera from the Brayton Barff sap-flows regarded by PFW as having conservation status include *Stegobium paniceum* (non-synanthropic contexts only), and the nitidulids *Thalycra fervida*, *Soronia grisea*, *Cryptarcha strigata*, and



*Cryptarcha undata*. The conservation value of a well-expressed Coleoptera assemblage is greater than that of the sum of its individual species. The oak sap-flow Coleoptera assemblages described by Ratti (1978) for the Varese Prealps, Italy (I) and Whitehead (1996) for Worcestershire, England (E) are defined by the following species (see also Walsh, 1954) of which those marked [B] are represented in the Brayton Barff fauna: *Omalium rivulare* (Pk.) [I], *Atheta euryptera* (Ste.) (I,E), *Atheta harwoodi* Williams [B,E], *Atheta gagatina* (Baudi) [I], *Thamiarea cinnamomea* (Grav.) [I], *Thamiarea hospita* (Maerkl.) [I,E], *Aleochara sparsa* Heer, [E], *Stegobium paniceum* [B], *Carpophilus marginellus*, [B,I,E] *Epuraea guttata* [I], *Epuraea unicolor* [B,I,E], *Soronia grisea* [B,I,E], *Soronia punctatissima* (Ill.) [E], *Thalycra fervida* [B] *Cryptarcha strigata* [B,I,E], *Cryptarcha undata* [B], and *Litargus connexus* Geoff. [I,E]. This represents a broad European arboreal oak-based assemblage of strong conservation value.

### Other insects

The cause of death of vespid wasps scattered around the base of Tree 1 is unknown, but appears to be related directly to the process of imbibing from the sap-flows. Some deaths may have been caused by hornets but this species was only encountered during the last two visits to the site in 2000 and is therefore unlikely to account for the deaths seen in earlier visits. Christy (1921) described dead wasps from *Ulmus* sap in Essex and suggested that the most likely cause of death was from intoxication although some may be due to attacks from hornets. Shillito (1947) also observed hornets attacking wasps and, in south-east Europe, PFW has observed intense activity involving both hornets *Vespa crabro* and other wasps *Paravespula* sp., at sap-flows, certain populations of the former developing into fiercely active predators of the latter.

Although no night visits were made to the trees, it is strongly suspected that the noctuids fed at night on the sap, as has been observed on diseased elms (Nicolson, 1921; Shillito, 1947).

Parasitic Hymenoptera were much in evidence around the trees. Those identified are parasitoids of hoverflies, clearwings and (other) micro-moths. It may be significant therefore that the hoverfly *Ferdinandea cuprea* was breeding in appreciable numbers in the sap and that yellow-legged clearwing was also recorded. The Parasitica were only partly sampled but comparison of their preferred hosts and the assemblage at Brayton Barff shows many similarities and indicates the close association this group has with sap-flows and diseased trees.

### IMPLICATIONS FOR HABITAT AND TREE MANAGEMENT

The main point for habitat management resulting from this study is the importance of damaged and diseased trees to uncommon and rare invertebrates. Cankers and sap-flows as well as other features such as rot-holes, crown dieback, limb damage through windthrow, lightning or other means and associated bracket fungi are regarded negatively by foresters, arboriculturalists and landowners. Trees with these features may be seen as requiring remedial treatment or even removal. The features associated with diseased or damaged trees therefore need to be viewed more positively by those responsible for managing the trees. Where there is risk to the public from diseased or damaged trees, for example along public footpaths, a more considered assessment of the options should be undertaken that will include the

retention of the trees and ensure public safety. This might include for example, the removal of overhanging or topheavy limbs rather than the entire tree.

The importance of diseased trees to rare invertebrate species was demonstrated clearly in the 1970s with the outbreak of Dutch Elm disease. This led to an increase in sap-flows on elms *Ulmus* spp. which in turn proved favourable to the Nationally Scarce *Odinia meijerei* (Diptera, Odiniidae) and led to an increase in the number of records of this uncommon species (Benson & Walker, 1974; Lewis, 1979). The decrease in elms through disease subsequently was matched by a near cessation in records of the fly.

Physical damage, soil compaction, drought (both natural and man-made) and competition from nearby conifers are also considered to be factors causing or exacerbating the poor health of the trees studied. With the exception of the former, it is probably unlikely that introduction of one or more of these features will create conditions suitable for saproxylic species. Physical damage to trees and even killing, however, has been advocated elsewhere as a means of providing a habitat for these rare wood-associated species (Alexander *et al.*, 1996 provide a summary of various methods). Ahnlund (1996) also proposed the mutilation and killing of aspens *Populus tremula* in Sweden as a means of protecting rare saproxylic species and this has recently been adopted in Scotland (I. MacGowan pers. comm.). Clearly, the adoption of such extreme measures, could only be considered where there is a large supply of trees so that individuals can be sacrificed and where there is active regeneration. The absence of these two factors is likely to preclude the widespread adoption of this approach in Britain. Such measures could be adopted with non-native species such as sycamore (*Acer pseudoplatanus*) and horse chestnut (*Aesculus hippocastanum*) since these species are also utilised by native saproxylic invertebrates (AG pers. obs.).

The study also shows that trees valuable to saproxylic invertebrates can occur away from designated sites and from well-known ancient woodlands and medieval parks. Such trees may be as valuable as those within designated sites. Although Brayton Barff is a SINC (Site of Importance for Nature Conservation) and is partly ancient woodland, this has not prevented the removal of all trees regardless of age or species in a broad band just to the south of the carpark for maintenance by the local water authority. A surprising fact obtained during the course of this study is that a tree has to be 'sound' for a Tree Preservation Order designation to be bestowed upon it. Whilst the reasons for this are clear to understand, it would mean that nature conservation comes second to the risk of litigation.

## CONCLUSIONS

The importance of sap-flows for invertebrates is confirmed, in particular for Coleoptera and Diptera, both of which include specialist species with a strong level of association to them, as well as numbers of more generalist and opportunistic species. It is apparent from this study that trees producing sap-flows attract species other than those dependent on sap itself for their development, although very few are considered insect tourists (in the sense that they have no association with the sap-flows). Several Diptera families, including some of the carrion feeders, appear to be recorded for the first time from sap-flows, including the Carniidae, Piophilidae and Dryomyzidae. Rare Diptera recorded include *Amiota basdeni* Fonseca (four previous British records), *A. alboguttata*, *Odinia maculata*, *O. meijerei*, *Periscelis annulata* and *Fiebrigella brevisbucca*. The high incidence of rare Diptera mirrors other recent work



carried out by the Malloch Society (Rotheray *et al.*, in press). Amongst the Diptera there proved to be certain absentees which otherwise might be expected on well-developed sap-flows. These were particularly amongst the Muscidae and their absence cannot be due to biogeography since several of these rare saproxylic species have been encountered by the first author elsewhere in the north of England. A number of the Coleoptera, particularly the Nitidulidae, are notable species of conservation status, especially in the regional context. The Lepidoptera and Hymenoptera also include representatives including the uncommon yellow-legged clearwing *Synanthedon vespiformis* and the hornet *Vespa crabro*. Visually and numerically the vespid wasps form a conspicuous and important part of the fauna whilst the importance of the Parasitica which were also frequent has been underplayed due to lack of expertise and lack of information on this group.

#### ACKNOWLEDGEMENTS

Particular thanks go to Mr Ken Merrifield for informing AG about the sap runs. Thanks are also due to Dr R. R. Askew for identifying the chalcids, Mr Harry Beaumont for identifying the clearwing, Dr Peter Chandler for identifying or checking the *Amiota* and *Odinia* determinations, Mr Rex Johnson for identifying the other moths, Dr Mark Shaw for sorting and identifying parasitic Hymenoptera and Doncaster Museum and Selby Library for use of resources. AG would also like to thank Dr Lazlo Papp and Dr Jan Maca for copies of their papers, whilst PFW wishes to thank Dr Mark Holderness for advice and comment on bacteriology of oak, and Mr R. Marsh for details of some Yorkshire Coleoptera.

#### REFERENCES

- Ahnlund, H. 1996. [Saproxylic Insects on a Swedish Aspen]. *Ent. Tidskr.* **117** (4): 137–144.
- Alexander, K.N.A. 1991. 1990 BENHS Exhibition: Coleoptera. *British Journal of Entomology and Natural History* **4**: 38.
- Alexander, K.N.A., Green, E.E. and Key, R. 1996. The management of overmature tree populations for nature conservation—The basic guidelines pp.122–135 In: *Pollard and Veteran Tree Management II*. Corporation of London.
- Allen, A.A. 1987. *Odinia maculata* Mg. (Dipt.) at Windsor; with a note on two other species in S-east London. *Entomologist's Record and Journal of Variation* **99**: 42–43.
- Andersson, H. 1999. [Red-listed or rare invertebrates associated with hollow, rotting or sapping trees or polypores in the town of Lund]. *Entomologische Tidskrift* **120** (4): 169–183.
- Anon. (1981) Brayton Barff Nature Trail [leaflet held in Selby Library].
- Archer, M. E. 1998. Threatened wasps, ants and bees (Hymenoptera: Aculeata) in Watsonian Yorkshire. PLACE Research Centre, University College of Ripon and York St John. Occasional Paper 2.
- Archer, M. E. 1989. The Spider-hunting wasps (Hymenoptera, Aculeata, Pompilidae) of Watsonian Yorkshire. *Naturalist* **114** (1988): 3–14.
- Assis-Fonseca, E. C. M. 1952. Diptera attracted by a *Cossus*-infested oak tree. *Entomologist's Record and Journal of Variation* **64**: 360–361.
- Assis-Fonseca, E. C. M. 1968. Diptera Cyclorrhapha Calyptrata section (b) Muscidae. *Hndbks Ident. Br. Insects* **10**: 4(b). Royal Entomological Society of London.
- Atty, D. B. 1983. *Coleoptera of Gloucestershire*. Cheltenham. 136 pp.
- Basden, E. B. 1954. The distribution and biology of Drosophilidae (Diptera) in Scotland, including a new species of *Drosophila*. *Transactions of the Royal Society of Edinburgh* **62**: 603–654.
- Belshaw, R. 1993. Tachinid flies Diptera: Tachinidae. *Hndbks. Ident. Br. Insects* **10**: 4a(i). Royal Entomological Society of London.

- Benson, J. F. and Walker, C. 1974. Abundance of *Odinia mejerei* Collin (Dipt., Odiniidae). *Entomologist's Monthly Magazine* **110**: 50.
- Bradbury, J. F. 1986. *Guide to plant pathogenic bacteria*. CAB International, Wallingford.
- Brown, E. A. 1999. [www.ces.uga.edu/agriculture/plantpath/docs/OrnTree/Slimeflx.html](http://www.ces.uga.edu/agriculture/plantpath/docs/OrnTree/Slimeflx.html).
- Buxton, P. A. 1960. British Diptera associated with fungi. III. Flies of all families reared from about 150 species of fungi. *Entomologist's Monthly Magazine* **96**: 61–94.
- Campadelli, G. 1995. Su alcuni parassitoidi di *Zeuzera pyrina* L. (Lep., Cossidae) in Emilia-Romagna. *Bollettino dell'Istituto di Entomologia della Università Studi di Bologna* **50**: 127–131.
- Carson, H. L., Krimbas, C. B. and Loukas, M. 1981. Slime fluxes, a larval niche of *Drosophila subobscura* Col. Proc. 2e Congres International sur la Zoogéographie et L'Ecologie de la Grèce et des Regions Avoisinantes—Athènes, Septembre 1981: 319–321.
- Chandler, P. J. 1973. Some Diptera and other insects associated with decaying elms (*Ulmus procera* Salisbury) at Bromley, Kent, with some additional observations on these and related species. *Entomologist's Gazette* **24**: 329–346.
- Chandler, P. J. 1986. *Odinia boletina* (Zetterstedt) (Diptera, Odiniidae) new to Ireland. *Irish Naturalist's Journal* **22** (3): 117–118.
- Chandler, P. J. 1990. Some biological notes on British lesser dung flies (Diptera, Sphaeroceridae), with a list of species known to be attracted to fungi. *British Journal of Entomology and Natural History* **3**: 55–61.
- Christy, M. 1921. Hornets, wasps and flies sucking the sap of trees. *Essex Naturalist* **19**: 1918–21: 10–14.
- Cole, E. J. and Streams, F. A. 1970. Insects emerging from brown slime fluxes in southern New England. *Canadian Entomologist* **102**: 321–333.
- Collin, J. E. 1946. The British genera and species of Oscinellinae (Diptera, Chloropidae). *Transactions of the Royal Entomological Society of London* **95**: 117–148.
- Collin, J. E. 1951. *Phaonia laetabilis* sp. n. with notes on some other related Anthomyiidae (Diptera). *Entomologist's Record* **113** (1): 1–5.
- Collin, J. E. 1952 On the European species of the genus *Odinia* R.-D. (Diptera: Odiniidae). *Proceedings of the Royal Entomological Society of London* (B) **21**: (7–8), 110–117.
- Collin, J. E. 1961. *British Flies Empididae*. Cambridge University Press.
- Español, F. 1992. Coleoptera, Anobiidae. *Fauna Iberica*, 2. Museo Nacional de Ciencias Naturales, Madrid, 195 pp.
- Falk, S. J. 1991. *A review of the scarce and threatened flies of Great Britain (Part 1)*. Nature Conservancy Council.
- Falk, S. J. and Ismay, J. in prep. *A review of the scarce and threatened Acalypterate Diptera of Great Britain*. Joint Nature Conservation Committee. Unpublished.
- Farrar, H. 1987. *Selby: The First Three Hundred Thousand Years*. Maxiprint, York.
- Ferrar, P. 1987. *A guide to the breeding habits and immature stages of Diptera Cyclorrhapha*. *Entomograph* 8, E.J.Brill/Scandinavian Science Press.
- Fowler, W. W. 1889. *The Coleoptera of the British Islands* 3. Lovell Reeve, London.
- Fox-Wilson, G. 1926. Insect visitors to sap-exudations of trees. *Transactions of the Entomological Society of London* **74**: 243–254.
- Godfrey, A. 1998. The Diptera of Moccas Park National Nature Reserve. *Dipterists Digest* **5**: 44–48.
- Godfrey, A. 2000. Diptera. In: Wall, T. and Harding, P. (eds.) *Moccas Deer Park—the history, wildlife and management of the first National Nature Reserve*. English Nature/Institute of Terrestrial Ecology.
- Gullan, P. J. and Cranston, P. S. 1994. *The insects: an outline of entomology*. Chapman and Hall. 491 pp.
- Haenni, J.-P. and Vaillant, F. 1994. Description of dendrolimnobia larvae of Scatopsidae (Diptera) with a review of our knowledge of the preimaginal stages of the family. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft* **67**: 43–59.
- Heath, J. and Emmet, A. M. 1985. *The moths and butterflies of Great Britain and Ireland. Volume 2. Cossidae—Heliodinidae*. Harley Books.
- Hum, M., Glaser, A. E., and Edwards, R. 1980. Wood-boring weevils of economic importance in Britain. *Journal of the Institute of Wood science* **22**: 201–207.



- Kaila, L., 1993. A new method for collecting quantitative samples of insects associated with decaying wood or fungi. *Entomologica Fennica* **4**: 21–23.
- Keilin, D. 1927. Fauna of a horse chestnut tree (*Aesculus hippocastanum*). Dipterous larvae and their parasites. *Parasitology* **19**: 368–374.
- Key, R. 1996. Invertebrate conservation and pollards pp. 21–28 In Read, H.R. (Ed.) *Pollard and Veteran Tree Management II*. Corporation of London.
- Kimura, M. T., Toda, M. J., Beppu, K., and Watabe, H. 1977. Breeding sites of drosophilid flies in and near Sapporo, northern Japan, with supplementary notes on adult feeding habits. *Kontyu, Tokyo*. **45** (4): 571–582.
- Kirk-Spriggs, A. H. 1991. Nitidulidae In: Cooter, J. (ed.) *A Coleopterist's Handbook* (3rd edition). Amateur Entomologists' Society 294 pp.
- Kirk-Spriggs, A. H. 1996. Pollen Beetles (Coleoptera:Kateritidae and Nitidulidae:Meligethinae). *Hndbks. Ident. Br. Insects*. **5**: 6a. Roy. Ent. Soc. Lond. 157 pp.
- Lamb, C. G. 1904. *Periscelis annulata* Fall., a drosophilid new to Britain. *Entomologist's Monthly Magazine* **15**: 277.
- Lewis, D. C. 1979. The larva and puparium of *Odinia meijerei* Collin (Dipt., Odiniidae). *Entomologist's Monthly Magazine* **114**: 233–235.
- Longman, K. A. and Coutts, M. P. 1974. Physiology of the oak tree In: Morris, M. G. and Perring, F. H. (eds.) *The British Oak, its history and natural history*. 194–221. B. S. B. I.
- Lyszkowski, R. W., MacGowan, I. and Rotheray, G. E. 1990. The Goat Moth (*Cossus cossus* (L.) Lep., Cossidae) and associated insects in Scotland. *Entomologist's Monthly Magazine* **128**: 24.
- Maca, J. 1980. European species of the subgenus *Amiota* s.str. (Diptera, Drosophilidae). *Acta Entomologica Bohemoslovaca* **77**: 328–346.
- MacGowan, I. 1993. The entomological value of aspen in the Scottish Highlands. *Malloch Society Research Report* **1**: 1–20.
- McLean, I. F. G. and Speight, M. C. D. 1993. Saproxylic invertebrates—the European context In: *Dead wood matters: the ecology and conservation of saproxylic invertebrates in Britain*. English Nature Series No. 7.
- Mendel, H. and Clarke, R. E. 1996. *Provisional atlas of the Click Beetles (Coleoptera:Elateroidea) of Britain and Ireland*. i–ix: 73 pp. Ipswich Borough Council Museums.
- Mohrig, V. W., Mamaev, B. and Krivosheina, N. 1979. New species of wood-utilizing Sciaridae (Diptera) from the Soviet Union. *Zool. Jb. Syst.* **106**: 572–588.
- Nicolson, C. 1921. On insects sucking the sap of trees. *Essex Naturalist* **19** (1918-21): 170–71.
- O'Connor, B.M. 1994. Life-history modifications in Astigmatid mites In: Houck, M. A. (ed.) *Mites: ecological and evolutionary patterns of life-history processes*. 357 pp. Chapman and Hall.
- Ogilvie, L. 1924. Observations on the “slime-fluxes” of trees. *Transactions of the British Mycological Society* **9** (3): 167–182.
- Papp, L. 1988. *Periscelis kabuli* sp.n. and *P. kaszabi* sp.n. with notes on larvae and pupae of the families Aulacigastridae and Periscelidae (Diptera). *Acta Zoologica Hungarica* **34** (2–3): 273–284.
- Papp, L. 1995. Morphology of *Periscelis annulata* third instar larva and *Turanodinia tisciae* larva and puparium (Diptera: Periscelidae and Odiniidae). *Acta Zoologica Academiae Scientiarum Hungaricae* **41** (1): 15–24.
- Papp, L. 1998. Life-habits of the Central European species of Periscelidae (Diptera). *Folia Entomologica Hungarica* **59**: 115–119.
- Papp, L., Rácz, O. and Bächli, G. 1999. Revision of the European species of the *Scaptodrosophila rufifrons* group Diptera, Drosophilidae. Mitteilungen der Schweizerischen Entomologischen gesellschaft. **72**, 105–117.
- Parson, T. 1995. The saproxylic invertebrates of Binscombe Hill, Crewkerne, Somerset. *Somerset Fauna and Flora* **1**: 46 pp. Privately published.
- Pechuman, L.L. 1937. An annotated list of insects found in the bark and wood of *Ulmus americana* L. in New York State. *Bulletin of the Brooklyn Entomological Society* **32**: 8–21.
- Ratti, E. 1978. La Coleottero fauna delle ferite di *Quercus robur* L. nelle Prealpi Varesine. *Atti. Conv. Ecol. Prealpi Or.* 295–325.
- Read, R. W. J. 1984. *Euophryum confine* (Broun) (Col., Curculionidae) in Cumbria. *Entomologist's Monthly Magazine* **120**: 46.

- Read, R. W. J. 1991. *Euophryum confine* Broun (Curculionidae) in West Cumbria. *Coleopterist* **42**: 8.
- Read, H. 2000. *Veteran trees: A guide to good management*. Veteran Trees Initiative, English Nature.
- Richards, O. W. 1930. The British species of Sphaeroceridae (Borboridae, Diptera). *Proceedings of the Zoological Society of London* **1930**: 261–345.
- Risbeth, J. 1982. Bacterial wetwood. *Arboriculture Research Note* **20**. Forestry Commission.
- Robinson, I. 1953. The hypopus of *Hericia hericia* (Kramer), Acarina, Tyroglyphidae. *Proceedings of the Zoological Society of London* **123**: 267–272.
- Rognes, K. and Ove Hansen, L. 1996. Further records of rare flies from Norway (Diptera: Perisecelidae, Stratiomyidae, Scathophagidae, Muscidae, Fanniidae, Calliphoridae, Rhinophoridae, Sarcophagidae, Tachinidae). *Fauna Norvegica Series B*. **43** (2): 75–79.
- Rotheray, G. 1993. Colour guide to hoverfly larvae (Diptera: Syrphidae) in Britain and Europe. *Dipterists Digest* **9**: 1–156.
- Rotheray, G. E., Hancock, G., Hewitt, S., Horsfield, D., MacGowan, I., Robertson, D. and K. Watt (in press) The biodiversity and conservation of saproxylic Diptera in Scotland. *Jnl. Insect Conservation*.
- Shillito, J. F. 1947. Notes on insects visiting diseased elms. *Entomologist's Monthly Magazine* **83**: 290–292.
- Siitonen, J. and Martikainen, P. 1994. Occurrence of rare and threatened insects living on decaying *Populus tremula*: A comparison between Finnish and Russian Karelia. *Scandinavian Journal of Forestry Research* **9**: 185–191.
- Skidmore, P. 1985. The biology of the Muscidae of the World. *Series Entomologica*. Vol. 29. W. Junk.
- Sluss, T. P. and Foote, B. A. 1973. Biology and immature stages of *Leucopis pinicola* and *Chamaemyia polystigma* (Diptera: Chamaemyiidae). *Canadian Entomologist* **105**: 1443–1452.
- Smith, K. G. V. 1989. An introduction to the immature stages of British Flies. *Hndbks Ident. Br. Insects* **10**: 14. Royal Entomological Society of London.
- Stubbs, A. E. 1972. Wild life conservation and dead wood. *Journal of the Devon Naturalist's Trust* **1972** (Suppl.): 1–18.
- Stubbs, A. E. and Chandler, P. J. C. 1978. *A Dipterist's Handbook*. The Amateur Entomologists' Society.
- Sutton, S. L. and Beaumont, H. E. (eds.) 1989. *Butterflies and Moths of Yorkshire. Distribution and Conservation*. Yorkshire Naturalists Union.
- Teskey, H. J. 1976. Diptera larvae associated with trees in North America. *Memoires of the Entomological Society of Canada* **100**: 1–53.
- Thompson, R. T. 1989. A preliminary study of the weevil genus *Euophryum* Broun (Coleoptera: Curculionidae: Cossoninae). *New Zealand Journal of Zoology* **16**: 65–79.
- Uffen, R. W. J. 1962. Some flies (Diptera) breeding in wounds on elm trees in Hyde Park. *London Naturalist* **42**: 25.
- Walsh, G. B. 1954. Methods: introductory notes In: Walsh, G. B. and Dibb, J. R. A *Coleopterist's Handbook*. *Amateur Entomologist* **11**: 1–120.
- Waterhouse, M. 1998. Fungus gnats and other flies (Diptera, Mycetophilidae, Sciaridae, Heleomyzidae and Sphaeroceridae) attracted to sapping sycamore stems. *Dipterists Digest*, Vol. **5** No. 1: 18.
- Whitehead, P. F. 1992a. The floodplain Coleoptera of the River Avon, Worcestershire, England, with provisional diagnoses of ancient assemblages. *Elytron* **6**: 15–33.
- Whitehead, P. F. 1992b. *Dolichovespula media* (Retzius) (Hymenoptera: Vespidae) new to the English Midlands. *Entomologist's Gazette* **43**: 1.
- Whitehead, P. 1996. *Eucnemis capucina* Ahrens 1812 (Col., Eucnemidae) at three sites in Worcestershire with a remarkable beetle fauna on *Quercus cerris* L. at one site. *Entomologist's Monthly Magazine* **132**: 187–195.
- Wilson, E. O. 1971. *The insect societies*. Harvard. 548 pp.
- Yerbury, J. W. Unpublished diaries 1898–1913 held in the Hope Entomological Collections, Oxford University Museum.



Zuska, J. and Lastovka, P. 1965. A review of the Czechoslovak species of the family Piophilidae with special reference to their importance to the Food Industry (Diptera, Acalyptata). *Acta Entomologica Bohemoslovaca* 62: 141–157.

## APPENDIX I

### INVERTEBRATES RECORDED ON OR BY OAK-SAP AT BRAYTON BARFF

The status of the Lepidoptera and Diptera is taken from the environmental recording package Recorder version 3.2. The status of the other groups is taken from Recorder or from the specialists consulted.

## TAXONOMIC LIST

### ACARINA

sp. indet.

### DERMAPTERA

*Forficula auricularia* L. Common

### PSOCOPTERA

*Trichadenotecnum sexpunctatum* (L.) Local and scattered

### LEPIDOPTERA

#### NYMPHALIDAE

*Vanessa atalanta* L. Migrant and resident

#### NOCTUIDAE

*Apamea monoglypha* (Hufn.) Common

*Acronicta tridens* (D. et S.) Local

*Oligia versicolor* (Bork.) Local

#### SESIIDAE

*Synanthedon vespiformis* (L.) Nationally Scarce

### COLEOPTERA

#### CARABIDAE

*Trechus quadristriatus* (Schr.) Common and widespread

#### HYDROPHILIDAE

*Helophorus obscurus* Muls. Common and widespread

#### STAPHYLINIDAE

*Anotylus tetracarinatus* (Blk.) Common and widespread

*Xantholinus longiventris* Hr. Common and widespread

*Philonthus nigriventris* Th. Localised and infrequent

*Atheta harwoodi* Will. Local, widely scattered

*Atheta amicula* (Ste.) Locally common

*Atheta coriaria* (Kr.) Common

*Atheta trinotata* (Kr.) Common and widespread

*Atheta coriaria* (Kr.) Local, widely scattered

*Atheta triangulum* (Kr.) Local, widely scattered

*Atheta crassicornis* (Fab.) Common and widespread

**ELATERIDAE***Hemicrepidius hirtus* (Hbst.)

Infrequent, widespread

**ANOBIIDAE***Stegobium paniceum* (L.)

Usually synanthropic

**NITIDULIDAE***Carpophilus marginellus* Mots.

Localised, often synanthropic

*Meligethes aeneus* (Fab.)

Common and widespread

*Epuraea unicolor* (Ol.)

Common and widespread

*Soronia grisea* (L.)

Local, widely scattered

*Soronia punctatissima* (Illiger)

Local

*Thalycra fervida* (Ol.)

Nationally Scarce. Localised

*Cryptarcha strigata* (Fab.)

Nationally Scarce. Localised

*Cryptarcha undata* (Ol.)

Nationally Scarce. Localised

*Glischrochilus hortensis* (Fourc.)

Common and widespread

**LATHRIDIIDAE***Corticarina fuscula* (Gyll.)

Common and widespread

**MYCETOPHAGIDAE***Typhaea stercorea* (L.)

Widespread, often synanthropic

**CURCULIONIDAE***Euophryum confine* (Brn.)

Naturalised, widespread

**DIPTERA****ANISOPODIDAE***Sylvicola punctatus* (Fab.)

Common

**SCIARIDAE***Sciara thomae* (L.)

Common

Sciaridae indet. (females)

**SCATOPSIDAE***Coboldia fuscipes* (Mg.)

Common

**HYBOTIDAE***Drapetis nigritella* (Zett.)

Local

*Platypalpus longiseta* (Zett.)

Common

**PHORIDAE**

Phoridae indet. (female)

**SYRPHIDAE***Episyrphus balteatus* (DeG.)

Common

*Meliscaeva cinctella* (Zett.)

Common

*Ferdinandeia cuprea* (Scop.)

Local

**DRYOMYZIDAE***Neuroctena anilis* Fall.

Common

**CHAMAEMYIIDAE***Leucopis* (*Leucopis*) sp. (females)**SPHAEROCERIDAE***Coproica hirtula* (Rondani)

Common

*Coproica vagans* (Hal.)

Common

*Spelobia bifrons* (Stenhammer)

Local

**LONCHAEIDAE***Setisquamalonchaea fumosa* Egger

Common

**PIOPHILIDAE***Mycetaulus bipunctatus* Fall.

Regionally Scarce (Northern England)



**ODINIIDAE***Odinia boletina* (Zett.)

Local

*Odinia maculata* (Mg.)

RDB3

*Odinia meijerei* Collin

Nationally Scarce

**CARNIIDAE***Meonura neottiphila* Collin

Regionally Scarce (Northern England)

**PERISCCELIDAE***Periscelis annulata* (Fall.)

Nationally Scarce

**DROSOPHILIDAE***Amiota alboguttata* (Whlbg.)

Notable

*Amiota basdeni* Fonseca

RDB2

*Drosophila busckii* Coq.

Common

*Drosophila funebris* (Fab.)

Unknown

*Drosophila hydei* Sturt.

Regionally Scarce (Northern England)

*Drosophila immigrans* Sturt.

Common

*Drosophila melanogaster* Mg.

Local

*Drosophila subobscura* Collin

Common

*Drosophila tristis* Fall.

Regionally Scarce (Northern England)

**CHLOROPIDAE***Fiebrigella brevibucca* Duda

Nationally Scarce

**CALLIPHORIDAE***Calliphora vicina* R.-D.

Common

*Calliphora vomitoria* (L.)

Common

*Lucilia ampullacea* Villeneuve

Local

*Lucilia caesar* (L.)

Common

*Lucilia illustris* (Mg.)

Common

*Pollenia pallida* Rodendorf*Pollenia rudis* (Fab.)

Common

**SARCOPHAGIDAE***Sarcophaga variegata* (Scop.)

Common

**TACHINIDAE***Phytomytera cingulata* (R.-D.)

Uncommon but widespread

**ANTHOMYIIDAE***Lasiomma seminitidum* (Zett.)

Common

*Anthomyia procellaris* (Rondani)

Common

*Delia coarctata* (Fall.)

Common

*Delia platura* (Mg.)

Common

*Pegomya* sp. (females)**FANNIIDAE***Fannia aequilineata* Ringdahl

Local

*Fannia canicularis* (L.)

Common

*Fannia manicata* (Mg.)

Common

*Fannia scalaris* (Fab.)

Common

**MUSCIDAE***Hydrotaea armipes* (Fall.)

Common

*Thricops diaphanus* (Wied.)

Common

*Muscina levida* (Harris)

Common

*Muscina prolapsa* (Harris)

Common

*Phaonia errans* (Mg.)

Common

*Phaonia pallida* (Fab.)

Common

*Phaonia rufiventris* (Scop.)

Common

<i>Phaonia subventa</i> (Harris)	Common
<i>Phaonia trimaculata</i> (Bouche)	Frequent
<i>Phaonia valida</i> (Harris)	Common
<i>Helina pertusa</i> (Mg.)	Local
<i>Helina reversio</i> (Harris)	Common

## HYMENOPTERA

### VESPIDAE

<i>Vespa crabro</i> (L.)	Regionally Notable (North England)
<i>Vespa germanica</i> (Fab.)	Common
<i>Paravespula vulgaris</i> (L.)	Common

### POMPILIDAE

<i>Dipogon subintermedius</i> (Magretti)	Local
--	-------

### ICHNEUMONIDAE

<i>Liotryphon crassisetus</i> (Thompson)	Uncommon but widespread
<i>Rhembobius praescrutator</i> (Gravenhorst)	Common
<i>Lissonata</i> spp.	

### EUPELMIDAE

<i>Calosota vernalis</i> Curtis	Unknown
---------------------------------	---------

### CHALCIDOIDEA

#### Torymidae

#### *Torymus* sp.

<i>Pachycrepoideus vindemiae</i> (Rondani)	Unknown
Pteromalidae indet.	

## SHORT COMMUNICATION

**Notes on some wetland Lepidoptera in Surrey.**—*Glyphipterix schoenicolella* Boyd (Glyphipterigidae). Adults of this species were numerous around tussocks of black bog-rush *Schoenus nigricans* growing along margins of flowing water in Folly Bog (SU9261). Moths were present from May to early September (17.v., 2.vi., 16.vi., 12.vii., 11.viii., 15.viii. 2000). This would appear to be the first record of this moth in VC17.

At the same site the purple-bordered gold *Idaea muricata* (Hufnagel) (Geometridae) occurs on the open mire areas, and from late June to mid July, adults were regularly encountered by day, flying rapidly, low to the ground. Porter (1997) states that marsh cinquefoil *Potentilla palustris* is the food plant, but as this plant is not found on Folly Bog, it must have alternative host(s).

*Prochoreutis myllerana* (Fab.) (Choreutidae). The map of this species provided by Heath & Emmet (1985) includes VC17 on the basis of unconfirmed records owing to the confusion with closely allied *P. sehestediana* (Fab.). I collected a female from Chobham Common (SU9765), which Graham Collins kindly identified as *P. myllerana*. This was one of dozens of *Prochoreutis* adults seen flying around skullcap *Scutellaria galericulata*, in warm but dull weather, on 3.viii.1998. The site was a recently cleared area of carr, over much of which the skullcap had spread.—J. S. DENTON, 2 Sandown Close, Alton, Hants, GU34 2TG.

## REFERENCES

- Heath, J. & Emmet, A. M., eds. 1985. *The Moths and Butterflies of Great Britain & Ireland*. Volume 2. Harley Books, Colchester, Essex.  
 Porter, J. 1997. *The Colour Identification Guide to Caterpillars of the British Isles*. Viking.



# THE BROWN HAIRSTREAK BUTTERFLY (*THECLA BETULAE* L.), IN IRELAND: AN EXAMINATION OF ITS HISTORICAL AND CURRENT STATUS

MICHAEL J. O'SULLIVAN

20 St James Gardens, Killorglin, Co. Kerry, Ireland

**Abstract.** The brown hairstreak (*Thecla betulae* L.) is probably Ireland's most under-recorded butterfly species. It is known, from recent data, to be restricted to Counties Clare, Galway and Tipperary. Where it occurs, it may be considered frequent but not generally common.

## INTRODUCTION

Entomological literature suggests that the brown hairstreak is rare and extremely local in Ireland. Although it is often retiring and secretive by nature, this, combined with a paucity of published records and a dearth of recorders have, in the writer's opinion, been responsible for the patchy and incompletely recorded distribution. In his classic work *Butterflies* (1945), E. B. Ford did not dispute the fact that *T. betulae* occurred in Ireland but he was critical of those who claimed it to be of frequent occurrence. Curiously, he omits the species from the Irish distribution map, a fact observed by Huggins (1951). Edward Meyrick (1928) refers to it as being local in western Ireland whilst, on the other hand, Newman & Mansell (1968) alluded to it as being absent from Ireland.

## EARLY RECORDS

Under the heading 'Notes on the Lepidoptera of Ireland', Edwin Birchall (1865), the Father of Irish Entomology wrote, "This species (*Thecla betulae*), usually considered a scarce insect in the British Islands, occurs abundantly in the west of Ireland. In August 1863, I saw it in great numbers near Galway, hovering over bramble blossoms, and at Killarney sparingly last August. It is active on the wing, but will only fly during sunshine, settling on the flowers when the sun is obscured even by a passing cloud, and if the weather is at all cold or wet, is so lethargic as to allow itself to be taken readily with the fingers. One wet afternoon in Galway I obtained about sixty specimens, mostly in fine condition, by this method. The curious onisciform larvae I have beaten in June from stunted blackthorn bushes". In 1866 he wrote that the brown hairstreak had not been taken in Ulster or Leinster.

Birchall (1819–1884) was apparently a man of leisure who travelled extensively throughout Ireland. It has been suggested, however, that in his writings he was prone to exaggeration, and W. Francis de Vismes Kane (1893) doubted whether the brown hairstreak was ever so abundant as he had suggested. This view is supported by Raymond F. Haynes (1916–1997) who, in an unpublished 'Guide to the Lepidoptera of the Killarney District', wrote "I am well aware that the validity of several of Birchall's records and some of his statements regarding the abundance of certain insects has been questioned. H. C. Huggins has suggested that Birchall was a careless writer and, certainly, some of Birchall's papers appear rather improbable to modern entomologists". Nevertheless, Birchall's literary output, which included more than fifty papers, has left an indelible legacy. Although some of his records have been

questioned, recent work confirms those for Clarinbridge and Oranmore, Co. Galway, were correct.

Most published records of the brown hairstreak are ancient, dating from the end of the 19th century and early years of the 20th. Kane's 'Catalogue' includes the Birchall records from Clarinbridge and Oranmore, as well as those from Blarney, Co. Cork (G. F. Mathew), Killoughrim Forest, Co. Wexford (C. B. Moffat) and Co. Kerry (Kane himself).

Under the title 'On the occurrence of *Gonepteryx rhamni* and *Thecla betulae* in Kerry' (1856), Andrews had noted "last year, however, in the month of August, in a secluded part of Muckruss, Killarney, in one of those tortuous mountain paths screened from the breeze, amidst the bright rays of an autumnal sun lighting up the sprays of the buckthorn and honeysuckle, the brimstone butterfly might be seen in numbers, basking in the sun's glare . . . near the same locality the brown hairstreak (*T. betulae*), a rare insect in Ireland, a single specimen, was met with . . . Mr. Andrews illustrated his remarks by specimens of the insects referred to". Incidentally, *G. rhamni* was, and is, an extremely rare insect in Co. Kerry so both records are noteworthy.

*The Entomologist's Monthly Magazine* for 1865 contains a short note, under the heading '*Thecla betulae* near Cork', written by Gervase F. Mathew from HMS *Warrior*. Matthew, who was Paymaster-General, had recorded other Irish insects. He states that, whilst visiting Blarney Castle on 5th August 1864, he observed the species flying over lying brushwood. As the purpose of his visit had been sightseeing, he did not have the opportunity of taking any specimens. Newman also quotes this record in his *Natural History of British Butterflies and Moths* (1869).

Charles Bethune Moffat (1859–1945) was, according to Robert Lloyd Praeger (1865–1953), the "most accomplished naturalist Ireland has produced". An extract from the Editorial of *The Irish Naturalists' Journal* for April 1946 stated "his passing means that this country has lost its foremost vertebrate zoologist and one of the keenest nature observers it ever possessed". He contributed extensively, on a wide range of subjects, to both *The Irish Naturalist* and *The Irish Naturalist's Journal*. The former Journal carried, in 1894, a brief note mentioning the occurrence of *Thecla betulae* in Killoughrim Forest, Co. Wexford. Five years prior to this, he had sent two specimens (male & female) from this locality to Kane who subsequently confirmed that these were the only Irish examples he had seen. Moffat, like Birchall, also caught specimens between finger and thumb, whilst walking through the forest. Interestingly enough, he gives Killoughrim as the locality for three other uncommon Irish butterflies, i.e., *Quercusia quercus* L. (purple hairstreak), *Erynnis tages* ssp. *baynesi* Huggins (dingy skipper) and *Eurodryas aurinia* ssp. *hibernica* Birchall (marsh fritillary). A further record appeared in *The Irish Naturalist* (1918) noting the sighting, but not capture, of a female brown hairstreak on 13 August 1918 in a wooded area of Urrin Valley, close to Kiltrea, Co. Wexford. At that time, this location was approximately one mile from the boundary of Killoughrim Forest. He speculated that the forest might have once incorporated this region and his observation suggests an example of localised survival. Notice is also drawn to the fact that the species had, of recent years, been rather scarce. This is the last known Co. Wexford record of *T. betulae*. There can be little doubt that Moffat's records were authentic, given that he had forwarded specimens to Kane for verification.

Robert Albert Philips (1866–1945) is, along with Harry Fogarty, most famously remembered for his discovery of *Boloria euphrosyne* L. (pearl-bordered fritillary) at Cloncoose, in the Burren, in June 1922. He also took *T. betulae* at Portumna, Co. Galway on 3 September 1924 and 21 August 1927, thus adding south Co. Galway to



the known Irish localities for the species. There are five of his specimens (4 female & 1 male) in the National Museum of Ireland, (Dr James O'Connor, pers. comm.). The condition of these specimens suggests that they were taken by the method already referred to by Birchall and Moffat, i.e., between finger and thumb.

Revd W. Sabine reported that he took specimens of the brown hairstreak at Portlaw village, Co. Waterford in 1939. This information was conveyed to E. S. A. Baynes by Major Philip P. Graves (1876–1953) and subsequently included in his *Revised Catalogue of Irish Macrolepidoptera* (1964), but without mention of the date of capture. Huggins' 1951 note in *The Entomologist*, already mentioned, did not shed any new light on distribution or status but was a brief summary, quoting the records of Philips and Mathew.

#### RECENT RECORDS

*A List of Irish Butterflies* (Baynes, 1960) stated that *T. betulae* was "reported in the past from south Galway, Wexford, north Kerry and mid Cork and more recently from Portumna, south Galway (1927)".

The next published data, confirming new sightings, were those of Haynes (1963). On 11.vi.1962, he beat fifteen larvae from sloe at Clarinbridge, Co. Galway. He retained seven for rearing, dispatched two to Baynes for inclusion in his *Catalogue of Irish Macrolepidoptera*, and returned the remainder to the foodplant. On 15 June, Baynes wrote to Mr Haynes congratulating him on his discovery of *betulae* larvae at Clarinbridge. "I have tried beating for them several times in different parts of Co. Galway, but have never found any. You need, I think, have no qualms about the record being doubted because one result of the publication of my Dublin Museum Butterfly List, was to bring to light a quite reliable, but unpublished, record of several of the butterflies being seen near Ballinahinch in 1952 (Co. Galway: J. L. Messenger). Personally, I have never had any serious doubt that the insect was still to be found in Ireland. You have the distinction of being the first lepidopterist to find the larvae for a great many years. Thank you very much for sending me two of the larvae. They arrived safely, and are now feeding on plum. I would ask you to agree to the following: if the insects are of the same sex I will pass one onto the Museum, but if they turn out to be one of each sex, then I hope you will allow me to keep both at any rate until such time as I may be able to rear some of my own. Actually, as I expect you know, the Museum has Philip's specimens from Portumna, though their condition leaves much to be desired". Raymond F. Haynes' record subsequently appeared in the revised Catalogue. The Haynes Collection in the Ulster Museum, Belfast contains seven specimens of *T. betulae* from Clarinbridge (Dr Brian Nelson, pers. comm.).

McCutcheon (1965) reported the capture, on 21.viii.1964, of a single female feeding from bramble blossom, at Luska, Lough Derg, approximately ten miles north of Nenagh, Co. Tipperary. Nash and Hardiman (1999) reported single specimens observed on 15, 21 and 25.viii.1996 on the eastern side of Lough Derg, Tipperary. These sites are not altogether far removed from Luska, the location of McCutcheon's sighting. As discussed by Nash & Hardiman, and referral to the Distribution Map, it seems that this is not an increase in the species range, but, most likely, localised survival following habitat fragmentation.

There are a number of records for the period 1960 to 1988, (Trevor Boyd, pers. comm.). In 1980, T. W. Tolman undertook an extensive survey in Co. Clare and Galway, and amassed a considerable amount of data. This work has, in the long term, proven to be of immense importance, *T. betulae* being encountered in eighteen

10 km squares. This is, effectively, the most intensive survey of the insect's Irish distribution ever undertaken.

A more recent account of the brown hairstreak in Ireland is Lavery & O'Sullivan (1986). The capture of two specimens, one of each sex, on 18.viii.1984, was reported from Lough Gealain in the Burren. It was of considerable surprise to both of us that the brown hairstreak was flying on a day, which was overcast, with incessant drizzle, interrupted by occasional heavy showers. The literature has always alleged that *T. betulae* will only fly in sunny conditions and, our first ever excursion to try to encounter the species was made under the most appalling conditions imaginable! It is ironic however, that Donovan, after over fifty years' experience, had not seen a live Irish specimen. It seems, also, that no other published records exist from the Burren, prior to 1986. However, O'Sullivan (1990) cites the species having been encountered, as both ova and imagines on 18.viii.1984 and also 1.vi & 2.vi.1986, 31.v.1987 and 29.v.1988, in the larval stage.

Trevor Boyd, the Northern Ireland Butterfly Recorder has written (pers. comm.) that "there have been no confirmed records of the brown hairstreak in the northern part of Ireland, there have been reports of possible sightings which were never able to be reliably authenticated. William Brush of Aughnacloy, Co. Tyrone, believed to be an excellent observer, reported a 'definite' sighting at Ravellea near Aughnacloy on 8.x.1970, with two other possible sightings there on 16.ix.1977 and 15.ix.1981, but he was too far away to be certain. He also reported a possible sighting on the edge of Reilly Wood, Co. Fermanagh in 1987 but, again, could not be sure. Roy Anderson, a professional entomologist from Newforge, Belfast, specialising in Coleoptera, believes he might have seen one at Reilly Wood in either 1984 or 1987, although the latter year may refer to William Brush's sighting". It is unfortunate, in view of the above, that no specimens can be produced as evidence for the existence of *T. betulae* in Northern Ireland as this would be an exciting development. Mr Boyd concludes "we continue to hope that we may find a colony of brown hairstreak in Northern Ireland; there is certainly suitable habitat, but it would be remarkable if it were so as it is so far from its southern range in Clare, Tipperary and south Galway".

Michael Salter of Dundalk has furnished the following information (pers. comm. and subsequently, Salter, 1999), "first encountered in 1980 when in May, I beat eight larvae from blackthorn at Cloughballymore, Ballinderreen (Grid 139/215). On reporting this to Eanna Ni Leamhna, I learnt that I was 'beaten to the post' by Dr. Tolman who had reported ova from eighteen adjacent 10 km squares earlier that spring. I wrote to E. B. Ford in Oxford since he had expressed doubt about this species occurring in Ireland in the NN *Butterflies*. I obtained five female and one male imagines. Subsequent years continued to find ova/larvae in reasonable numbers, especially around Boston/Lough Bunny, Co. Clare—would list them as 'frequent'. In the last two years, I have assisted David Nash in establishing whether the species still inhabits the area delineated by Tolman, roughly Claregalway to Ennis and Black Head to Craughwell. They are confirmed in thirteen of the eighteen of Tolman's squares—whilst not finding evidence in three of the remaining Squares is, in my opinion, of little importance since Tolman's reports were from the margins of these respective Squares: Square 12/18—Corrofin 128/189, Square 15/21—Craughwell 150/219 and Square 15/22—Stoneleigh 150/222. The remaining two Squares, 13/22—Oranmore and 13/23—Claregalway, are the most environmentally altered as they are now both within the Galway suburbs, whether they have been eliminated or are just harder to find remains the question".

Salter concludes that "in 1996, I quite unexpectedly found larvae on the western side of Corrib (126/231) and, consequently, at a number of further sites in this 10 km

Square, 12/23 and three others 11/23, 11/24 and 12/24. I doubt if this is an increase in the brown hairstreak's range in recent times as it seems so well established and I also encountered two other 'Burren' species, the small blue and dingy skipper at the same time, neither of which has been previously reported from there".

During the mid-1980s, the Burren colonies, most especially those around Cloncoose and Lough Gealain, close to Mullaghmore were threatened by over-collecting. It was evident that large numbers of larvae were being systematically beaten out and the foodplant damaged. It is impossible to gauge the scale of the damage inflicted at this time, but recent visits to these localities have shown little evidence of interference with sloe, suggesting that this threat has now abated.

#### DEDICATION

This article is dedicated to the memory of Raymond F. Haynes, of Killarney, Co. Kerry. Raymond had lived at Killarney since 1976 and, prior to settling in the area, had been a regular visitor to Ireland. He exhibited an almost unparalleled dedication to recording the local moths and butterflies. His collection, now housed at the Ulster Museum in Belfast is testament to a lifetime's work and his passing away, on 3rd June 1997, has left Irish entomology much the poorer for his loss.

#### ACKNOWLEDGEMENTS

A great debt of thanks is due to the following, without whose assistance, in its many guises, this article would not have reached fruition: Trevor Boyd, Northern Ireland Butterfly Recorder; Cambridge University Library; Raymond Cook; Bernadette Cunningham, Royal Irish Academy, Dublin; Gordon D'Arcy; George R. Else, Department of Entomology, Natural History Museum, London; Eleanor Heron, British Library, London; John W. Lavery; David Nash; Brian Nelson, Ulster Museum, Belfast; James O'Connor, National Museum of Ireland, Dublin; Michael Salter; Mark Shaw, National Museum of Scotland, Edinburgh; Janet Smith, Bodleian Library, Oxford; Ryan Tebbitt, British Library, Reprographics, London; Tom Tolman; Catherine Tyrie, Ulster Museum, Belfast; Mike Wilson, National Museums and Galleries of Wales, Cardiff.

#### REFERENCES

- Andrews, W. 1856. On the occurrence of *Gonepteryx rhamni* and *Thecla betulae* in Kerry. *Natural History Review (1855/1856)*, *Proceedings of the Societies* 3: 68.
- Baynes, E. S. A. 1960. *A List of Irish Butterflies*. National Museum of Ireland.
- Baynes, E. S. A. 1963. *Thecla betulae* L. (Lep. Lycaenidae) in Ireland. *Entomologist's Gazette* 14: 124.
- Baynes, E. S. A. 1964. *A Revised Catalogue of Irish Macrolepidoptera*. Classey.
- Beirne, B. P. 1985. Irish Entomology: The First Hundred Years. Special Entomological Supplement. *The Irish Naturalists' Journal*.
- Birchall, E. 1865. Notes on the Lepidoptera of Ireland. *Entomologists Monthly Magazine* 1: 270.
- D'Arcy, G. & Hayward, J. 1992. *The Natural History of the Burren*. Immel Publishing.
- Emmet, A. M. & Heath, J., eds. 1989. *The Moths & Butterflies of Great Britain & Ireland* 7 (1). Harley Books.
- Ford, E. B. 1945. *Butterflies*. New Naturalists Series. No. 1. Collins.
- Frohawke, F. W. 1924. *The Natural History of British Butterflies*. Hutchinson. 2 Vols.
- Frohawke, F. W. 1934. *The Complete Book of British Butterflies*. Ward & Lock.
- Heath, J. et al. 1985. *Atlas of Butterflies in Britain & Ireland*. Viking.



- Haynes, R. F. 1963. Notes on Lepidoptera in the West of Ireland. *The Irish Naturalists' Journal* **14**: 175.
- Haynes, R. F. 1966. *Lepidoptera of the Killarney District*. Unpublished.
- Hickin, N. (ed. Lavery T. A.) 1992. *The Butterflies of Ireland. A Field Guide*. Robert Rinehart Publishers.
- Howarth, T. G. 1984. *Colour Identification Guide to the Butterflies of the British Isles*. Viking.
- Huggins, H. C. 1951. *Thecla betulae* in Ireland. *The Entomologist* **84**: 69.
- Kane, W. F. de v. 1893. Catalogue of the Lepidoptera of Ireland. *The Entomologist* **26**: 69–73, 117–121, 157–159, 187–190, 212–215, 240–244, 269–273.
- Lavery, J. W. & O'Sullivan, M. J. 1986. Quest for *T. betulae* (Brown Hairstreak) in Ireland. *Bulletin Amateur Entomologists' Society* **45**: 190.
- McCutcheon, W. I. 1965. *Thecla betulae*, Brown Hairstreak Butterfly in Co. Tipperary. *The Irish Naturalists' Journal* **15** (2): 55.
- Mathew, G. F. 1865. *Thecla betulae* near Cork. *The Entomologist's Monthly Magazine* **1**: 116.
- Meyrick, E. 1928. *Revised Handbook of British Lepidoptera*. Watkins & Doncaster.
- Moffat, C. B. 1895. *Thecla betulae* in Co. Wexford. *The Irish Naturalist* **4**: 78.
- Moffat, C. B. 1918. New Locality for *Thecla betulae*. *The Irish Naturalist* **27**: 172.
- Nash, D. W. & Hardiman, D. M. 1999. The brown hairstreak *Thecla betulae* L. (Lepidoptera) in North Tipperary (H10). *The Irish Naturalists' Journal* **26** (7/8): 277–278.
- Nash, R. 1975. The butterflies of Ireland. *Proceedings & Transactions of The British Entomological and Natural History Society* **7**(3): 69–73.
- Newman, L. H. & Mansell, E. 1968. *The Complete British Butterflies in Colour*. Ebury Press.
- Ni Leamhna, E. 1978. *Provisional Atlas of Butterflies in Ireland*. An Foras Forbatha.
- O'Sullivan, M. J. 1990. Burren Lepidoptera. *Bulletin Amateur Entomologists' Society* **49**: 37–45.
- Salter, M. 1999. An extension of the Irish range of the brown hairstreak *Thecla betulae* (L.) (Lepidoptera: Lycaenidae). *The Irish Naturalists' Journal* **26** (5/6): 203.

## ADVICE ON THE REPORTING, LICENSING AND IDENTIFICATION OF ALIEN, OR EXOTIC, INVERTEBRATE PLANT PESTS

R. J. C. CANNON, P. W. BARTLETT AND R. J. TUPPEN

*Central Science Laboratory, MAFF, Sand Hutton, York, YO41 1LZ*

### NOTIFICATION TO MAFF OF ALIEN INVERTEBRATE PLANT PESTS

Plant Health legislation is aimed at preventing the introduction, establishment and spread of alien plant pests. Findings of such harmful organisms must be reported (address 1, below), in order to ensure that the risks are properly assessed, and managed accordingly. Suspicion that an invertebrate is alien is sufficient to require notification. Although most exotic plant pests are intercepted on imported plants and plant material, some are occasionally found in outdoor situations. The assistance of entomologists and the general public, in bringing such pests to the attention of the Plant Health authorities, plays a vital role in preventing the establishment and spread of harmful species originating from other countries.

A large number of invertebrate plant pests (insects, mites and nematodes) are listed in the Annexes of the European Community (EC) Plant Health Directive (2000/29/EC). However, other 'unlisted' organisms, which may be of plant health significance, are also regularly intercepted in the UK. One role of the Plant Health authorities is to determine the risks posed by such organisms, and where necessary to take action to contain and eradicate them.

Invertebrates arrive in the UK both by natural means and with human assistance. *The Plant Health (Great Britain) Order 1993* (Anon., 1993a) and the *Plant Health (Forestry) (Great Britain) Order 1993* (Anon., 1993b) prohibit the importation of

any plant pest which “is not normally present in Great Britain”, and require notification of the presence, or suspected presence, of such alien plant pests. In practice this is taken to mean the reporting to the appropriate authorities of any invertebrate which is not known to be established in the UK, excluding occasional migrants. Rapid notification is necessary and this should not await final identification.

#### LICENSING REQUIREMENTS FOR THE IMPORTATION AND HOLDING OF PLANT PESTS

A licence is required to keep any live invertebrate which is not normally present in Great Britain and is considered to be a risk to plant health. Licences authorise the importation and movement of plant pests for scientific purposes. The role of the licensing authority is to assess whether or not any risk exists, and if so, to determine to what extent it requires quarantine containment. Guidance on the importation of organisms is available from MAFF (address 1, below) (Anon., 1997).

Most other countries have similar legislation, so it is recommended that before knowingly exporting any organism, the authorities of the importing country should be consulted. The UK embassy or consulate should usually be able to give general guidance on the rules and on suitable contacts. For plant pests being moved to another EU member state, Plant Health Division (address 1, below), MAFF, should be consulted to obtain a “letter of authority” to accompany the consignment.

#### DISPATCH AND IDENTIFICATION OF SUSPECT ORGANISMS

Suspect organisms may be sent to the Plant Pest & Disease Diagnosis Section, Central Science Laboratory (address 2, below), for identification. No charges are levied for the identification of suspect plant pests which are not known to be established in the UK. Samples should be labelled, and details documenting where, when and how the organism was discovered, included. Live immature specimens should be sent in a plastic tube with sufficient host material to enable survival during the journey. Adults and active immature specimens are best sent in clear plastic tubes, so that contents can be viewed before removal. For invertebrates larger than 2 mm, a few holes should be punctured in the lid. Samples should be packaged in strong cardboard boxes, and posted as soon as possible after collection, using the first class mail.

#### REFERENCES

- Anon. (1993a). *The Plant Health (Great Britain) Order 1993*. Statutory Instrument No. 1320. London: HMSO.
- Anon. (1993b). *Plant Health (Forestry) (GB) Order 1993*. Statutory Instrument No. 1283. London: HMSO.
- Anon. (1997). *Explanatory leaflet on Importing Invertebrates*. Ministry of Agriculture, Fisheries and Food. Leaflet PHI 8 (3/00) 6 pp.

#### ENQUIRIES AND NOTIFICATIONS CAN BE ADDRESSED TO PLANT HEALTH AT:

1. MAFF, Foss House, Peasholme Green, York, YO1 7PX, tel: 01904 455174.
2. Central Science Laboratory, Sand Hutton, York YO41 1LZ, tel: 01904 462224 (licensing) 462214 (identification).
3. Forestry Commission, 231 Corstophine Road, Edinburgh, EH12 7AT, tel: 0131 314 6401.
4. Scottish Agricultural Science Agency (SASA), East Craigs, Edinburgh, EH12 8NJ, tel: 0131 244 8863.
5. Department of Agriculture and Rural Development (DARD), Dundonald House, Upper Newtonards Road, Belfast, BT4 3SB, tel: 02890 524188.

## ***XESTIA RHOMBOIDEA* (ESPER) (SQUARE-SPOTTED CLAY) (LEPIDOPTERA): REQUEST FOR INFORMATION**

DAVID YOUNG

*Graylings, School Road, Tunstall, Woodbridge, Suffolk IP12 2JQ.  
email: youngdavid@compuserve.com*

*Xestia rhomboidea* (Esper) (square-spotted clay) is one of fifty-three priority moth species listed in the UK Biodiversity Action Plan. Each of these species is regarded as being rare, local or declining, and conservation action is now required to help ensure their continued survival in this country. Under the Biodiversity Action Plan, Butterfly Conservation are acting as the lead partner for fifty-two of the listed species. With their resources and conservation expertise, they are well placed to administer the individual species projects, supervise the work, report the results and monitor the situation. They would welcome the assistance of entomologists, particularly in the early stages of the project where field work could provide much of the information from which sound management plans can be developed. It is in this area that BENHS members can assist through the BENHS Conservation Working Group.

*X. rhomboidea* is listed as a priority species because available information suggests that it is in decline nationally. It seems to have been lost from the south-west counties, and probably from Hampshire, but there is no obvious reason for such a contraction in its range. It is a moth associated with open woodland, downland and scrub where the undergrowth is sparse and where there are plenty of nectar sources. Whilst the adult moth is attracted to light it appears to be more readily seen when nectaring at *Senecio* spp. (ragwort), *Arctium* spp. (burdock), *Epilobium* spp. (willowherbs) and no doubt anything else available. However there have been some large (20+) numbers recorded at m.v. light traps in recent years but who knows how many others ignored the traps in favour of a good feed at the blossoms. Single examples are sometimes recorded in garden m.v. traps, possibly wanderers from nearby habitats which may be supporting colonies of this moth.

*X. rhomboidea* has often been bred in captivity from an adult female and it seems to be an easy species to breed with the larva accepting a wide range of food plants. However few entomologists, if any, have found the larva in the wild so that accurate information on its natural food plant(s) is currently lacking. It seems likely that *X. rhomboidea* will be like other *Xestia* species in accepting a wide range of herbaceous plants, and shrubs, as food. It would be interesting to know which food plants are used naturally if only to better inform future management plans.

I would welcome any records of *X. rhomboidea* from 1990 onwards that BENHS members can give me. These records will be collated and passed to Butterfly Conservation together with all relevant field work observations. Would you please scan through collections, note books, computer records or memories, and let me have as much of the following information as you can:

Date

Site

Map reference (6 figure if possible)

Vice-county number (if known)

Recording method (m.v., sugar, net etc)

Number seen

Stage (adult, larva)

A brief description of the site could be most useful.



**SOME BEHAVIOURAL OBSERVATIONS ON *MEGASELIA OXYBELORUM* SCHMITZ (DIPTERA: PHORIDAE), A NEW KLEPTOPARASITE OF *CERCERIS ARENARIA* (L.) (HYMENOPTERA: SPHECOIDEA: PHILANTHIDAE)**

CARLO POLIDORI<sup>1</sup>, R. H. L. DISNEY<sup>2</sup> & FRANCESCO ANDRIETTI<sup>1</sup>

<sup>1</sup>*Sezione di Zoologia e Citologia, Dipartimento di Biologia, Università degli Studi di Milano, via Celoria, 26-20133 Milano, Italy*

<sup>2</sup>*University Museum of Zoology, Downing Street, Cambridge, CB2 3EJ, UK*

**Abstract.** Females of *Megaselia oxybelorum* are reported entering nests of *Cerceris arenaria* and males were observed near the nests but did not enter.

### INTRODUCTION

The Phoridae comprise a large family of Diptera that includes many species associated with Hymenoptera, sometimes with little host specificity (Wcislo, 1990). Larvae of some species are parasitoids of the host's brood, some of the adults, others are predators, facultative or obligate. In some cases the larvae feed on the host's provisions (kleptoparasitism). Most recorded hosts of Phoridae are Formicidae (Disney, 1994), but also some cases of bees and wasps as hosts are known (e.g. Coville & Griswold, 1983, 1984; Disney *et al.*, 2000). The giant genus *Megaselia* Rondani includes a few species associated with Vespidae, Sphecidae, Crabronidae, Pompilidae and Megachilidae (e.g. Collart, 1933; Krombein, 1967). A case of kleptoparasitism on the pollen stores of the communal bee *Andrena agillissima* (Scopoli) has been reported recently (Disney *et al.*, 2000).

The species observed in this study, *Megaselia oxybelorum* Schmitz, belongs to a species complex that has been revised for the Palaearctic Region by Disney (1988). *Megaselia oxybelorum* has been reared from *Locusta migratoria* L. egg pods (Schmitz, 1930), and it has been reared from an adult fly, *Fannia scalaris* (Fabr.) (Diptera: Fanniidae), paralysed by *Oxybelus uniglutinis* (L.) (Hymenoptera: Crabronidae) (Chevalier, 1925; Schmitz, 1928). The common feature would seem to be a living, immobilised, slightly-wounded, insect resource buried in the soil (Disney, 1994).

### METHODS

Specimens of *Megaselia oxybelorum* were observed in July 1999 flying around some nests of an aggregation of *Cerceris arenaria* (L.), on a farm near Lodi (Lombardy, Italy). The data were collected by a cassette recorder and filmed with a videocamera, to increase the reliability of the observations. The nests visited by the phorids were marked with a number related to the *Cerceris* owner. Quantitative data were collected for two females at two different nests (No. 121 and 159), on two different days.

### RESULTS AND DISCUSSION

Females of *Megaselia oxybelorum* flew around the nesting site of *Cerceris arenaria*, and sometimes visited their nests. When this happened, the fly remained in the nest for at most a few minutes (from less than 1 to about 5 minutes, see Table 1). They

TABLE 1. Summary of observations of females of *Megaselia oxybelorum* at two nests of *Cerceris arenaria*

Nest code no.	timeIN average	timeIN st.dev.	timeIN range	timeOUT average	timeOUT st.dev.
121	146	177.011	33-350	22	19.798
159	113*	—*	113 (1 datum)*	5*	—*

Nest code no.	timeOUT range	dist. average	dist. st.dev.	dist. range	total of visits
121	8-36	8.6666	7.0945	1-15	3
159	5 (1 datum)*	2.25	1.5	1-4	4

timeIN = time spent by *Megaselia oxybelorum* inside the nest (seconds)timeOUT = time spent by *Megaselia oxybelorum* out of the nest between two entries in the same nest (seconds)dist. = distance, from the nest, where *Megaselia oxybelorum* stops and waits between two subsequent entries in the same nest (cm)

st.dev. = standard deviation

always visited a nest several times; 3–4 times repeatedly. The time between one visit and the next (for the same nest) was very short, always less than one minute (see Table 1), and in this time the fly never moved too far from the nest entrance (from 1 to 15 cm). These movements around the nest were made by walking, not flying.

The males were observed following females, which were looking for a nest to enter. They never entered a nest and they did not mate with females near the nest entrances. This contrasts with *Megaselia andreanae* Disney (Disney *et al.*, 2000) and other phorid flies, like *Phalacrotophora halictorum*, a kleptoparasite of the halictid bee *Lasioglossum figueresi* (Wcislo, 1990) and like some phorid flies which are kleptoparasites of stingless bee colonies (Roubik, 1992).

An interaction with a female *Cerceris arenaria* was also observed. Despite the female *Megaselia oxybelorum* being driven away from the nest, it waited until the wasp had flown away and then entered the nest again.

These observations are the first on *Megaselia oxybelorum* in association with *Cerceris arenaria*, and constitute a new host record for this kleptoparasitic fly.

#### ACKNOWLEDGEMENTS

Thanks are due to Francesco Isola, for his field assistance. RHL'D's studies of Phoridae are funded by the Isaac Newton Trust (Trinity College, Cambridge).

#### REFERENCES

- Chevalier, L. 1925. *Phora pygmaea* Zett. Diptère mangeur de mouches. *Bulletin de la Société de Sciences de Seine-et-Oise* 6: 93–96.
- Collart, A. 1933. Diptères élevées des nids de guêpes. *Bulletin du Musée Royal d'Histoire Naturelle de Belgique* 9: 1–8.
- Coville, R. E. & Griswold, C. 1983. Nesting biology of *Trioxylon xanthandrum* in Costa Rica with observations on its spider prey (Hymenoptera: Sphecidae; Aranea: Senoculidae). *Journal of the Kansas Entomological Society* 56: 205–216.
- Coville, R. E. & Griswold, C. 1984. Biology of *Trypoxylon (Trypargilum) superbum* (Hymenoptera: Sphecidae), a spider-hunting wasp with extended guarding of the brood by males. *Journal of the Kansas Entomological Society* 57: 365–376.
- Disney, R. H. L. 1988. The Palaearctic species resembling *Megaselia pygmaea* (Diptera, Phoridae), including two new species. *Annales Entomologici Fennici* 54: 153–161.
- Disney, R. H. L. 1994. *Scuttle Flies: The Phoridae*. London: Chapman & Hall.
- Disney, R. H. L., Scanni, B., Scamoni, E. & Andrietti, F. 2000. A new species of scuttle fly (Diptera: Phoridae) whose larvae are kleptoparasites of a bee (Hymenoptera: Andrenidae). *Giornale italiano di Entomologia* 9: 99–104 (1998).
- Krombein, K. V. 1967. *Trap-nesting wasps and bees: life histories, nests and associates*. Washington D.C.: Smithsonian Institution Press.
- Roubik, D. W. 1992. *Ecology and natural history of tropical bees*. Cambridge: CUP.
- Schmitz, H. 1928. Verlag der Maandelijksche vergadering 5. *Megaselia oxybelorum* n. sp. *Natuurhistorisch Maandblad* 17: 121–122, 131–132.
- Schmitz, H. 1930. Phoriden aus Eipaketen von *Locusta migratoria* in Daghestan. *Natuurhistorisch Maandblad* 19: 67–69.
- Wcislo, W. T. 1990. Parasitic and courtship behavior of *Phalacrotophora halictorum* (Diptera: Phoridae) at nesting site of *Lasioglossum figueresi* (Hymenoptera: Halictidae). *Revista de Biologia Tropical* 38(2A): 205–209.



***CTENOCHARES BICOLORUS* (L.),  
AN AFRICAN ICHNEUMONID (HYMENOPTERA)  
FOUND IN BRITAIN**

RICHARD A. JONES

*135 Friern Road, East Dulwich, London SE22 0AZ.  
bugmanjones@hotmail.com*

**Abstract.** *Ctenochares bicolorus* (L.), an African ichneumonine species, was found in Battersea Park, London. Unusually for a mainly sub-Saharan species, it also occurs around the Mediterranean coast of Africa and Southern Europe. In the 1970s and 1980s it became established in Australia and New Zealand. It is known as a parasitoid of the noctuid moths *Chrysodeixis chalcites* (Esper)/*C. eriosoma* (Doubleday).

INTRODUCTION

On 6 July 2000, I caught a large and distinctive ichneumon as it hawked about in the low herbage of "Duck Island", one of three man-made islands on the ornamental lake in London's Battersea Park, TQ2877. Despite its striking appearance, identification using standard British keys (Perkins, 1959, 1960) failed to lead anywhere.

Ichneumonid expert Jim Brock of the Horniman Museum, Forest Hill, confirmed that it was not a hitherto known British species and was probably some introduced exotic. Ichneumon specialist Mike Fitton, of London's Natural History Museum, identified the specimen as a female of *Ctenochares bicolorus* (L.), a predominantly African species, which parasitizes noctuid caterpillars.

Several return visits to the park, its lake and its islands, failed to discover any further specimens of *Ctenochares*. A Malaise trap was set up on one of the other islands in the lake: "Goose Island" is larger and with a broad open area seemed a better site for such a flight interception trap. Despite many weeks of operation between July and September 2000, no further specimen of *Ctenochares* was found.

DESCRIPTION

*Ctenochares bicolorus* is unmistakable (Fig. 1), and easily distinguished from other British ichneumons by its characteristic wing and body colours.

A large (body length: 13 mm, wing length: 9 mm) brightly coloured species. Body mainly bright testaceous orange, except head, thoracic pleura and abdominal segments 4 onwards, deep black. Antennae with basal two-fifths orange, central fifth white and apical two-fifths black. Palps and legs orange, except coxae (especially hind pair) variously dark marked; hind femora black except basal fifth orange and hind tibiae darkened at apex. Front wing obscurely clouded with orange basally and abruptly blackened beyond the areolet (cell 2Rs). Hind wing clouded with orange between costa and first vein (Sc + R) and around anal lobe, and slightly blackened at tip. Scutellum with strong marginal carinae; mesoscutum also marginally carinate. Gaster closely and minutely punctured, except the petiole (tergite 2) which has strongly striate-sculptured gastrocoeli.

The insect is particularly striking in life, its dark wing-tips and black tail contrasting starkly with its bright orange body. At rest, or when running about the herbage, with wings held back over its body, the blackened wing-tips perfectly coincide with the apical black abdominal segments.



Fig. 1. *Ctenochaeres bicolorus* (L.), female, Battersea Park, London, 6.vii.2000.

## DISCUSSION

*Ctenochaeres bicolorus* is fundamentally an African ichneumonine. It is mainly a sub-Saharan species, recorded widely from Ivory Coast to Somalia down to South Africa. Unusually, it also occurs in Africa north of the Sahara: it is recorded from the Canary Islands and the Mediterranean coasts of Morocco, Algeria, Egypt, Spain, France, Italy and Greece. In addition, it has been found in Australia, first in 1970, and New Zealand, first in 1981 (Fitton *et al.*, 1983).

This widespread distribution, disparate and apparently disjointed, nevertheless follows the known distribution of *Chrysodeixis chalcites* (Esper)/*C. eriosoma* (Doubleday)—the only known host (or hosts) of *Ctenochaeres bicolorus* (Fitton *et al.*, 1983). Although the name *C. chalcites* is often used to denote the African and south-west Palaearctic specimens and *C. eriosoma* those in the Indo-Australasian-Pacific regions, they are also sometimes treated as synonymous rather than as sister species. However, whether one or two taxa, their joint range extends across the same vast swathes of Africa (above and below the Sahara) as does *Ctenochaeres bicolorus*. Indeed, they also extend through the eastern end of the Mediterranean, the Persian Gulf states, the Indian subcontinent and out into most of south-east Asia, Pacific China to Japan, Australia, New Zealand and even as far as Polynesia, Hawaii and other far-flung Pacific islands.

In considering the apparent jump of *Ctenochaeres bicolorus* from Africa to Australia and New Zealand, Fitton *et al.* (1983) comment on the ichneumon's apparent absence from much of the supposed hosts' intermediate geographical range. However, they also note that such an ichneumonid parasite of a well-known migrant moth is quite likely to have migratory tendencies itself but they conclude that *Ctenochaeres bicolorus* was unlikely to have reached Australia from Africa without the help of some human agency.

*Chrysodeixis chalcites* is a very rare migrant to Britain, but a few specimens are recorded. Skinner (1984) lists 20 records between 1943 and 1983, mainly from the south coastal English counties, but also Essex, Glamorgan and Inverness-shire. The discovery of but a single specimen of *Ctenochaeres* here is frustrating. Battersea Park is already home to an oddball assortment of foreign species including the Australian

amphipod "sandhopper" *Arcitalitrus dorrieni* (Hunt) (Jones, 1999a), the Australian scarabaeid beetle *Saprosites mendax* Blackburn (Jones, 1999b), and the European tephritid fly *Rhagoletis meigenii* (Loew) (Jones, 2000).

*Arcitalitrus* is well established in south-west England, but almost certainly arrived at Battersea as a hitch-hiker in soil or leaf-litter associated with horticultural material. *Saprosites* has been established in England (Arundel Park) since the 1930s but has arrived somehow in London in the 1980s and appears to be spreading of its own accord. The *Rhagoletis* is potentially a "natural" arrival, since it occurs widely on the Continent and its European foodplant (barberry, *Berberis vulgaris* L.) is a native (albeit uncommon) British species; however it was found in Battersea associated with *Berberis thunbergii* DC, a Japanese shrub widely planted in parks and gardens, so might equally be an unwitting import with plant material.

Until further specimens of *Ctenochares* are found, it is difficult to establish how it arrived here or what it was doing flying around an island in Battersea Park. It is possible that, in Britain it will parasitize some other plusiine moth; Fitton *et al* (1983) report specimens of *Ctenochares rufithorax* (Kreichbaumer) reared from *Thysanoplusia orichalcea* (Fab.) in Kenya. A jump from southern Europe to South London is much less of a journey than from South Africa to Sydney, but unless further specimens are found, perhaps parasitizing other noctuid caterpillars, it must remain a rather shadowy and enigmatic species.

Oddly, my Battersea example of *Ctenochares bicolorus* is not the first specimen of this striking creature to find its way into a collection of British insects. Morley (1910) reported finding a lone female of, as it then was, *Ctenochares (Joppites) instructor* Fabricius, among the "reputed British species" of the Stephens collection in the British Museum (Natural History). Without data, and without any suggestion of a true place on the British list, Morley immediately dismissed it as a highly unlikely native species. That specimen still stands, with Morley's label now under it, incorporated into the main world ichneumon collection of London's Natural History Museum (M. Fitton, personal communication).

The Battersea specimen of *Ctenochares bicolorus* has been presented to the Natural History Museum for its "British" collection. As a late 20th century specimen, with full data attached, it will at least have some claim to the indigenous origin denied by Morley to the early 19th century Stephens example. And hopefully it will be joined by other specimens found here during the 21st century.

#### ACKNOWLEDGEMENTS

My thanks go to Jim Brock (Horniman Museum, London) for his advice, the loan of the Malaise trap and for his enthusiastic encouragement of my new-found interest in the ichneumonoidea, and to Mike Fitton (Natural History Museum, London) for identification and help with literature references.

#### REFERENCES

- Fitton, M. G., Gauld, I. D., Roberts, L. I. N. & Walker, A. K. 1983. An African ichneumonid (Hymenoptera) in Australasia. *Bulletin of Entomological Research* 73: 465–468.
- Jones, R. A. 1999a. The terrestrial 'sandhopper' amphipod *Arcitalitrus dorrieni* and other invertebrate oddities from Battersea Park. *London Naturalist* 78: 119–123.
- Jones, R. A. 1999b. *Saprosites mendax* Blackburn (Scarabaeidae) under sycamore logs in Battersea Park, London. *Coleopterist* 8: 120.



- Jones, R. A. 2000. *Rhagoletis meigenii* (Loew, 1844) (Diptera: Tephritidae) rediscovered in Britain. *Entomologist's Record and Journal of Variation* **112**: 253–256.
- Morley, C. 1910. Jottings on the British Ichneumonidae in the national collection. *Entomologist* **43**: 167–174.
- Perkins, J. F. 1959. Hymenoptera: Ichneumonoidea. Ichneumonidae, key to subfamilies and Ichneumoninae I. *Handbooks for the Identification of British Insects* **7(2ai)**.
- Perkins, J. F. 1960. Hymenoptera: Ichneumonoidea. Ichneumonidae, subfamilies Ichneumoninae II, Alomyinae, Agriotypinae and Lycorininae. *Handbooks for the Identification of British Insects* **7(2aii)**.
- Skinner, B. 1984. *Colour Identification Guide to Moths of the British Isles*. Harmondsworth: Viking.

---

## BOOK REVIEW

**The Insects. An Outline of Entomology.** 2nd edition. P. J. Gullan and P. S. Cranston. Blackwell Science. 2000. Softback; £26.50. ISBN 0-632-05343-7

When the 1st Edition of *The Insects* appeared, it quickly became *the* text for most general entomology courses in universities in many parts of the world. And, because it provides a mine of information for anyone wanting to widen their general knowledge and horizons, it was found to be ideal as a general text for specialists to refer to for ideas and for updates on a wide range of topics outside their field. To many, it was considered the best entomological textbook available due to its width of coverage and general slant towards the environment and evolution. The 2nd Edition is even better.

Although the book is now with different publishers and has been completely reformatted, the basic structure and layout, which had been so successful in the 1st edition, has been retained. However, the “pawprint” of the new publishers, Blackwell Science, is immediately evident because the typeface is slightly smaller and, in my view, clearer. In addition, the layout of the text in the boxes has been changed and an even smaller typeface used but, as the text in the boxes is now in “newspaper” columns, it is still quite readable. This reformatting has allowed for a slight reduction in the size of some boxes so that they now fit on a single page.

Whilst the basic layout remains the same, there have been a number of significant changes. As the authors admit in their Preface to the 2nd Edition, a book of this type cannot include everything but, in response to pressure from the users of the 1st Edition, a number of topics have now been expanded or incorporated into the previous text. For instance, a chapter on collecting, specimen preservation and curation, has been added towards the end, which will be very welcome to most users. In addition, a number of other topics have been added or expanded. Thus, they have expanded the section on insect physiology, particularly in relation to tolerance of environmental extremes and thermoregulation, and also on the control of development. In addition, certain areas of insect behaviour have been expanded, particularly that on insect–plant interactions, migration and diapause, predator avoidance, and nuptial feeding and associated topics. Further, functional feeding groups in aquatic insects and an enlarged section on insect–plant relationships have been added for the ecologically minded. Another significant change is that the summary tables of diagnostic features have been moved from near the front to after the Index, thus facilitating quick reference. I was also pleased to note that at least one error in the 1st Edition had been corrected—the use of a sticky globule on the

end of thread incorporating a synthetic female sex-pheromone by the bolas spider in order to catch male moths should not be included under kairomones as it can hardly be said to benefit the male moths (the receivers!).

Two of the best features of the 1st Edition (the original eye-catching illustrations by K. Hansen McInnes and the boxes, which provided examples and other data related to the general text) have been augmented. In particular, new boxes have been introduced on a range of topics, including ones for two important resurging pests (*Phylloxera* and *Bemisia*), the origin of an aquatic way of life, the molecular basis of development, and parasitoid host detection by hearing. In addition, 6 pages of colour plates—41 photos in all—have been included. These show not only some colourful cryptic species but also aspects of insect–plant interactions and general insect biology. These are all excellent and are an added bonus and should help to excite interest in this field.

Whilst there are a number of general entomological textbooks available at the present time, none quite covers the same range of topics as *The Insects*. Another excellent textbook, also called *The Insects*, by R. F. Chapman (Cambridge University Press) is, as the subtitle indicates, mainly about structure and function and, indeed, it covers these topics in greater depth than Gullan & Cranston but provides little information on ecological and environmental aspects, which are discussed so well in the present book.

This is an excellent general text and is highly recommended for students and for anyone who needs a good textbook for reference on entomological topics outside their normal field of interest.

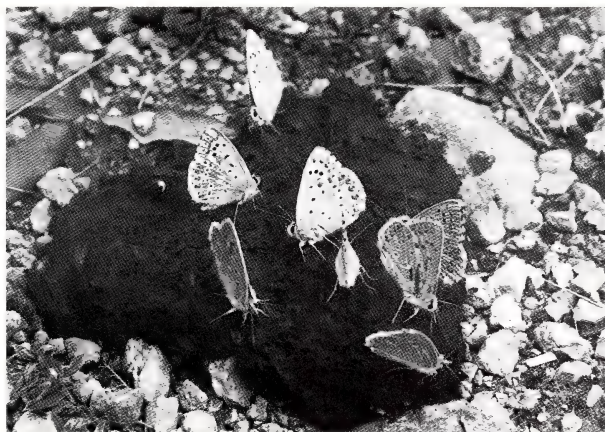
CHRIS HODGSON

## LETTERS TO THE EDITOR

The short communication on butterflies feeding at dung (R. A. Jones, 2000, *Br. J. Ent. Nat. Hist.* 13: 134–135) has prompted a flurry of correspondence from readers. The following is an edited selection of these letters.

**Chalkhill blue feeding on cow dung.**—I saw a chalkhill blue behaving in a similar way on 30.vii.1998, but on cow dung, at the National Trust property The Holies, at Streatley, Berkshire. The male butterfly had its proboscis extended onto the surface of the cow pat, which my notes, made at the time, describe as “moist”. I have also seen the holly blue feeding from damp mud, but as you say, such observations do seem infrequent in Britain.—MARTIN HARVEY, 10 Kiln Ride, Upper Basildon, Berkshire RG8 8TA. martin@kitenet.freeserve.co.uk

**Chalkhill blues feeding on dung.**—It is interesting how something out of the ordinary for one entomologist can be quite commonplace to another. I am referring to the note on the chalkhill blue on dung. For many years I have observed this species “feeding” in large numbers on many kinds of dung. In fact it is an extremely common sight in the hills of Provence during the heat of July, when soil and vegetation begin to dry out. On many occasions I have been able to select aberrations of this species by returning several times during the day to the same good, fresh pile of dung. The photograph (below) was taken some years ago on Mont Ventoux. I show eight butterflies feeding on this substrate, but I have seen up to 22 specimens engaged in the same activity.—LEONARD MCLEOD, 33 Lochbay, Watnish, Isle of Skye IV55 8GD.



**Chalkhill blues feeding on dung.**—I recently observed many chalkhill blues feeding on dung. Whilst walking on the North Downs at Denbies Hillside (Westcott Downs, TQ1349), over a period of about half an hour and a distance of a few hundred metres, I noticed a number of instances of blues feeding on dung—presumably dog, but I did not examine it closely. There must have been at least a couple of dozen males involved and in one particular aggregation there were eight males feeding on a deposit, all with probosces fully extended. I did not think it especially unusual, as I have seen much greater aggregations of blues on farm tracks and roadsides in the Cévennes.—KEITH HARRIS, 81 Linden Way, Ripley, Woking, Surrey GU23 6LP. kmharris@lineone.net



**Butterflies feeding on dung.**—I read with interest the article regarding butterflies visiting and feeding on dung. I was rather surprised at the limited numbers of species encountered. As a farmer, I have often witnessed butterflies feeding on dung at my farm, mostly in the farmyard; these include: small tortoiseshell, peacock, red admiral, comma, small blue, common blue, ringlet, small copper, small white, large white, brimstone, orange-tip and clouded yellow.

As a point of interest, I have never seen a butterfly land on freshly made manure, indeed not even on manure a week or two old. Visits I have seen have always been to dung at least a month old, often older dung that has just had rain on it followed by sunshine shortly afterwards.

On 20.viii.2000 I watched a clouded yellow fly pretty quickly through the yard; it suddenly pulled up and dropped onto some dung which was very old, but which only two hours before had been drenched in a thunderstorm. It briefly used its proboscis to delicately probe the dung, then suddenly flew off again.

One possible reason that I observe more butterfly visits to dung in the yard is that after winter housing there, the cattle return to the fields, but the manure remains on the concrete and does not break down with age as it would in the meadows.—E. G. SMITH, Bullen Hill Farm, Ashton Common, Trowbridge, Wiltshire BA14 6DY.

**Holly blue feeding on bird droppings.**—I too have seen butterflies feeding on dung. In May 1997, I watched a male holly blue feeding on a large bird dropping. It appeared at regular intervals and probed the dropping, which led me to believe that it was actually feeding.—PAUL TALBOT, 133 Park Road, Elland, Halifax, West Yorkshire HX5 9HZ. paulinvc63@aol.com

**Two more British butterflies on dung.**—At approximately 14.30h on 13.viii.1994, while observing butterflies on Lough Down at Streatley in Berkshire (SU588811), I noticed a male adonis blue (*Lysandra bellargus* (D. & S.)) settled on a fresh, moist cowpat. It was undisturbed by my approach, when closer examination proved it to be probing the surface with its proboscis. Here it remained for at least one full minute, during which time it would intermittently walk to change position, before flying off.

On 23.vii.1999, while walking northwards past the tumulus along the main ride in Micheldever Wood, Hampshire (SU533366), my attention was caught by a comma butterfly (*Polygonia c-album* L.) resting with wings open on a piece of dog dung in the middle of the ride. Although I was able to observe it for a while from a few metres distance, my approach disturbed it, on which it flew up and settled on the ground a number of times but did not return to the dropping. I was therefore unable to confirm whether it was actually feeding. However the dung itself appeared quite dry, with no obviously moist patch.—LEONARD WINOKUR, Flat 3, Charles Court, 7 Darwin Road, Southampton, Hampshire SO15 5BS.

## OFFICERS' REPORTS FOR 2000

### COUNCIL REPORT 2000

At the end of the year the Society's membership stood at 853, an increase of six on the previous year. Thus after several years of rapid growth we seem to have reached a plateau in membership which has remained essentially unchanged for the last two years. Indeed with a rise in subscription rate coming into effect we might anticipate a fall in membership next year. We continue to welcome new members with 48 joining this year but, against this, 17 members resigned and 19 were struck-off for non-payment of subscriptions. Among those who resigned were five who had been members for twenty years or more. We hope these resignations are not the result of dissatisfaction with the Society but rather the inevitable consequences of advancing years. Seven deaths were reported to the Society during the year and again we lost some old friends representing over 300 years of membership between them. On a more positive note, two members, Dr P. E. L. Viette and Mr D. H. Walker, completed 50 years of continuous membership and were elected Special Life Members.

The Annual Exhibition continues to be the main event of the Society's year and is attended by about one-fifth of the membership. This year's event was preceded by a poor season for insects and coincided with countrywide floods and transport problems. It is not surprising that the number attending the Exhibition was 19 fewer than the previous year and that the number of exhibits was down by 30. The decision to have a theme for the Exhibition of 'Garden Insects' seems to have been a success as there were a good number of exhibits in this category. A theme of 'Hedgerow Insects' has been chosen for 2001. During the year the Council considered the possibility of inviting a small number of booksellers and equipment traders to the Exhibition but no decision has been reached on this. The Exhibition was followed by another successful Annual Dinner attended by 40 members and guests. Eleven indoor meetings, thirty-four field meetings and seven workshop meetings were held during the year. The average attendance at indoor meetings has increased to 23 this year and workshop meetings continue to be popular and well attended. The field meetings were spread over 20 counties in England, Scotland and Wales. Aside from the *Journal*, the Open Days at the Pelham-Clinton Building, the Exhibition, the indoor and field meetings and the workshops are the main points of contact between the Society and its members. The Council would, therefore, like to thank Ian McLean, Mike Simmons and Paul Waring for arranging these events, and Peter Chandler, the lecturers and meeting leaders who give their time to them.

Sales of the Society's publications have remained steady over the last three years, averaging around £4800 per annum. This is a lot less than in the mid-1990s and reflects the lack of new publications in recent years. The Publications Committee does, however, have a number of projects in hand and these include books on British Soldierflies, British Heteroptera and British Plume Moths. It seems that when publishing such works the dates of publication are difficult to predict and here the Society does not differ much from commercial publishers. The Council does appreciate that it must be frustrating for members to have to wait so long for the appearance of some of these works but we are confident that the waiting will be rewarded by a better product. During the year *British Hoverflies* was reprinted with some additional pages bringing it right up to date. *New British Beetles* is nearly out of print and a revised second edition is under preparation by the authors.

One issue from the previous year which again occupied the Council's time was the matter of permits issued by Forest Enterprises for field meetings. After further representation by the Society, supported by Butterfly Conservation, Forest

Enterprises agreed to relax the rules and re-word the permits. The matter thus seemed to have been resolved although, at the time of writing, it is not clear that the message has reached all parts of Forest Enterprises. The Council would like to thank Dr David Lonsdale for his help in relaying our concerns to Forest Enterprises. The subject of access to land also concerned the Joint Committee for Conservation of British Invertebrates (JCCBI) who felt that some provisions of the Countryside and Rights of Way Bill could be interpreted in such a way as to make recording or collecting insects difficult on land to which access was given. The Society supported the JCCBI's representations to the Department of the Environment, Transport and the Regions and it is hoped that these will be reflected in the departmental guidance on interpretation of the Act.

The year 2001 will see the launch of the Invertebrate Conservation Trust (ICT), an initiative of the JCCBI (now Invertebrate Link) of which the Society is a member. The Society has participated in the discussions leading to the formation of the ICT and, during the year, agreed to provide the initial administrative support and finance to set up the ICT as a charitable trust. The costs are expected to be minimal and should be recoverable. At the end of the year the Society sent a formal letter of support to the fledgling organisation. The Society's contribution to insect conservation also involved holding a two day insect workshop/field meeting in Herefordshire for the local Wildlife Trust and the continuation of the Heathland Flies project, part of the government's Biodiversity Action Plan. In spite of poor weather the Heathland Flies project was able to consolidate the findings of the first year and for two of the three species we now have a foundation on which more detailed studies can be based. The third species, *Chrysotoxum octomaculatum*, remains elusive and so far only one breeding site has been identified. Individually a number of Society members are contributing to Butterfly Conservation's Action for Threatened Moth Species project.

The Pelham-Clinton Building remains a focal point of the Society's activities and the investment in it has undoubtedly contributed to the Society's healthy state. Having a building is not, however, without its problems and maintenance of the air conditioning system, which is necessary for the safe storage of our collections and library, continues to be a major problem. While the temperature has remained steady through the year, and the high humidity limit has not been exceeded, the humidity has often been far too low which could damage our library stock. Peter Chandler has devoted much time to liaison with the air conditioning maintenance firm this year and the Council hopes it can ease this burden in 2001.

Towards the end of the year the Society was invited to a meeting, hosted by the Linnaean Society, at which the Institute of Biology's (IoB) Jamieson Report was discussed. This report was commissioned by the IoB to examine the future of biology in the UK. The report concentrated on the molecular and biomedical fields of biology; taxonomy, conservation, field and evolutionary biology were scarcely considered. The report, by a management consultant, concluded that small societies such as ours could not survive in the 21st century and recommended that such societies, together with the larger ones, should form a single federation. The report also concluded that it was necessary for biology to speak with "one voice" when talking to government and politicians and that a federation could ensure this was done. The IoB is now in the process of setting up a federation of biological societies. The Council did not agree with the scope or findings of the Jamieson Report and felt that there was nothing to be gained from association with a professional body such as the IoB. The Council will keep a watching brief on these developments.

JOHN MUGGLETON



## TREASURER'S REPORT

Our income has fallen this year and expenditure risen and we have also suffered from the poor year in the financial markets. The underlying figures, however, show some positive features.

The increase in costs is all of direct charitable expenditure, where we want it, and management expenses have decreased. A major cost this year has been some £7,000 in respect of the long anticipated binding of journals and repairing books. The cost of producing and distributing the *Journal* has risen by more than 10% and there are additional costs at Dinton Pastures. The cost of our annual exhibition continues to increase and this year we also printed the new membership list.

Subscription income has gone up even before the increase in rates which took effect from this January 1st but investment income is down. Investments have performed less well primarily as a result of a poor year on the stock exchange although the value of our holdings is down at £239,988 with an unrealised loss of only £1,566. As we have no intention of realising our assets this loss is academic. The market value is still £79,000 ahead of cost and we must hope for investment growth once again this year. Although these matters are largely outside our control they are not without concern. As Henry Tibbats Stainton wrote in the *Entomologist's Weekly Intelligencer* in, I believe, 1856, 'it is a very anxious post that of Treasurer to a learned society'.

In spite of all this both the Endowment and Restricted Funds have increased in value, as has the Research Fund.

Even with the deficit of £18,775 for the year I am confident that the Society continues to be well able to financially support our increasing activity.

Dennis O'Keeffe and Alec Harmer have again undertaken an independent examination of the financial records and accounts as our auditors and I extend the Society's thanks to them.

A. J. PICKLES

## *Independent Examiners' Report*

We report on the accounts of the Society for the year ended 31 December 2000, which are set out below.

### *Respective Responsibilities of Trustees and Examiners*

As the Charity's Trustees you are responsible for the preparation of the accounts, you consider that the audit requirement of Section 43 (2) of the Charities Act 1993 does not apply. It is our responsibility to state, on the basis of procedures specified in the General Directions given by the Charity Commissioners under Section 43(7)(b) of the Act, whether particular matters have come to our attention.

### *Basis of Independent Examiners' Report*

Our examination was carried out in accordance with the General Directions given by the Charity Commissioners. An examination includes a review of the accounting records kept by the Charity and a comparison of the accounts presented with those records. It also includes consideration of any unusual items or disclosures in the accounts, and seeking explanations from you as Trustees concerning any such

matters. The procedures undertaken do not provide all the evidence that would be required in an audit, and consequently we do not express an audit opinion on the view given by the accounts.

*Independent Examiners' Statement*

In connection with our examination, no matter has come to our attention:

1. which gives us reasonable cause to believe that in any material respects the requirements
  - a. to keep accounting records in accordance with Section 41 of the Act; and
  - b. to prepare accounts which accord with the accounting records and to comply with the accounting requirements of the Act have not been met; or
2. to which, in our opinion, attention should be drawn in order to enable a proper understanding of the accounts to be reached.

D. O'KEEFFE and A. S.HARMER

*Statement of Financial Activities  
for the year ended 31 December 2000*

		Unrestricted Funds	Restricted Funds	Endowment Funds	Total Funds 31.12.00	Total Funds 31.12.99
<b>Incoming Resources</b>						
Subscriptions		11575	—	—	11575	10250
Investment Income		3600	7198	792	11590	15110
Trading Income	note 2	1049	3492	—	4541	6495
Sundry Income	note 3	3859	—	—	3859	5323
<b>Total Incoming Resources</b>		<b>20083</b>	<b>10690</b>	<b>792</b>	<b>31565</b>	<b>37178</b>
<b>Resources Expended</b>						
<b>Direct Charitable Expenditure:</b>						
Cost of Journal & Distribution		14042	—	—	14042	12608
Cost of facility at Dinton Pastures		—	4112	—	4112	2368
Members Meetings & Services		6771	—	—	6771	3914
Library & Curation		8416	—	—	8416	634
Grants	note 10	1713	—	636	2349	2555
Sundry Income costs	note 3	1000	—	—	1000	5200
Depreciation		4629	2210	—	6839	7397
		<b>36571</b>	<b>6322</b>	<b>636</b>	<b>43529</b>	<b>34676</b>
<b>Other Expenditure</b>						
Management costs		4031	—	—	4031	4745
Trading costs	note 2	—	2780	—	2780	2474
		<b>4031</b>	<b>2780</b>	<b>—</b>	<b>6811</b>	<b>7219</b>
<b>Total Resources Expended</b>		<b>40602</b>	<b>9102</b>	<b>636</b>	<b>50340</b>	<b>41895</b>

Net Resources before transfers	(20519)	1588	156	(18775)	(4717)
Net Incoming/Outgoing Resources	(20519)	1588	156	(18775)	(4717)
Gains & Losses on Investment assets					
Realised	(13)	—	—	(13)	—
Unrealised	(487)	(973)	(106)	(1566)	10854
Net movement in Funds	(21019)	615	50	(20354)	6137
Fund Balances brought forward at 1 January 2000	152932	300450	16918	470300	464163
Fund Balances carried forward at 31 December 2000	131913	301065	16968	449946	470300

*Summary Income and Expenditure Account*

	2000	1999
Gross Income of continuing operations	31565	37178
Total expenditure of continuing operations	50340	41895
Net/Outgoings for the year	(18775)	(4717)

*Balance Sheet as at 31 December 2000*

	Notes	2000	2000	1999	1999
Fixed Assets					
Tangible Assets	4		178656		185616
Investments	5		239988		247882
			418644		433498
Current Assets					
Stocks		9852		7319	
Debtors	6	9638		8310	
Cash at Bank and in hand	7	15074		23868	
		34564		39497	
Creditors: amounts falling due within one year	8	3262		2695	
Net current assets			31302		36802
Net assets			449946		470300
Funds	9				
Endowment Funds—Hering Fund			16968		16918
Restricted Funds—Housing Fund		229104		231689	
Special Publications Fund		71961	301065	68761	300450



## Unrestricted Funds:

Research Fund	36873		36611	
General Fund	95040	131913	116321	152932
		449946		470300

The accounts were approved by the Council of Trustees on 1 March 2001 and signed on its behalf.

Notes to the accounts  
for the year ended 31 December 2000

## 1. Accounting Policies

The Accounts of the Charity are prepared in accordance with the Charities (Accounts and Reports) Regulations 1995, the statement of recommended practice, Accounting by Charities, and with applicable accounting standards. They are drawn up on the historical accounting basis except that investments held as fixed assets are carried at market value.

### 1.1 Income

Donations and legacies are accounted for as soon as their amount and receipt are certain. In the case of donations this is usually when they are received. All other income is accounted for under the accruals concept. Gifts in kind are valued at their estimated value to the Charity.

### 1.2 Expenditure

Expenditure is accounted for under the accruals concept. The irrecoverable element of VAT is included with the item of expense to which it relates. Depreciation is allocated over the expenditure headings on the basis of the use of the assets concerned.

### 1.3 Tangible Fixed Assets

Tangible fixed assets are stated at cost or trustees valuation less depreciation which is calculated at rates to write off the excess of cost over estimated residual values of individual assets over their estimated useful lives as follows

Leasehold Buildings at Dinton Pastures	1/70th of cost
Fixtures and Equipment	10% of written down value

### 1.4 Investments

Fixed asset investments are stated in the balance sheet at mid market value at the balance sheet date.

### 1.5 Stock

Stock is valued at the lower of cost, including irrecoverable VAT, and market value and consists of publications and sundries held for resale.

### 1.6 Restricted Funds

Restricted funds are subject to specific conditions laid down by the donors as to how they may be used.

## 2. Trading Income and Expenditure

Trading income is derived from the sale of the *British Journal of Entomology* to non-members of the Society and from sale of the Society's other publications and products, costs are those of printing and distributing these items.

## 3. Sundry Income

Sundry income has been derived from the sale of surplus insect cabinets and specimens and income from the annual dinner. Costs associated with this represent assumed value of cabinets sold.

## 4. Tangible fixed assets

Cost	Leasehold Property £	Fixtures & Equipment £	Total £
At 1 January 2000	154736	65143	219879
Additions	—	879	879
Disposals	—	(1000)	(1000)
At 31 December 2000	154736	65022	219758
Depreciation			
At 1 January 2000	15470	18793	34263
Charge for year	2210	4629	6839
On disposals	—	—	—
At 31 December 2000	17680	23422	41102
Net book values			
At 31 December 2000	137056	41600	178656
At 31 December 1999	139266	46350	185616

Leasehold premises represents the cost of building and equipping the headquarters at Dinton Pastures Country Park. The total cost of these premises which were completed during the year to 31 December 1993 are being amortised over the seventy year term of the lease.

Fixtures and equipment includes a value for the library and collections as well as computers, microscopes and other ancillary equipment. Additions consist of amounts spent on new insect cabinets and library acquisitions and binding. Disposals represents the sale of surplus cabinets.

## 5. Investments

In accordance with accounting requirements investments are shown in the balance sheet at market value.

	2000		1999	
	M.V.	Cost	M.V.	Cost
Shell T & T	6138	1250	6328	1250
Unilever	11588	248	12198	248
M & G Charifund	64551	20238	66547	20238

Treasury 1999 9¼ %	—	—	2640	2392
Treasury 8%	—	—	3688	3688
Hendersons Bond	63921	58000	64276	58000
Sun Life Bond	69398	56000	67223	56000
Barings Bond	24392	25000	24982	25000
	<hr/>	<hr/>	<hr/>	<hr/>
	239988	160736	247882	166816

## 6. Debtors

	2000	1999
Due within one year		
Trade debtors	825	754
Recoverable Taxation	4529	4528
Prepayments and accrued income	4284	3028
	<hr/>	<hr/>
	9638	8310

## 7. Cash at Bank and in Hand

National Westminster Bank		
Societies Reserve	14483	22393
Current Account	443	1327
Eurocheque Account	148	148
	<hr/>	<hr/>
	15074	23868

## 8. Creditors: amounts falling due within one year

Trade Creditors	2662	2695
Accruals	600	—
	<hr/>	<hr/>
	3262	2695

## 9. Funds

Analysis of net assets between funds

	Tangible Fixed Assets	Investments	Net Current Assets	Total
Endowment Funds:				
Hering Fund	—	17568	(600)	16968
Restricted Funds:				
Housing Fund	137056	92048	—	229104
Special Publications	—	62154	9807	71961
Unrestricted Funds:				
Research Fund	—	36873	—	36873
General Fund	41600	31345	22095	95040
	<hr/>	<hr/>	<hr/>	<hr/>
	178656	239988	31302	449946

The Hering Fund was endowed to make grants out of income for research in specific areas of entomology.



The Housing Fund consists of the property at Dinton Pastures and money put aside to finance its upkeep and eventual replacement. The funds were derived principally from bequests from the late Duke of Newcastle, Mr Crow and Mr Hammond.

The Special Publications Fund finances the Society's publications other than the *British Journal of Entomology* and surpluses from such publications are credited to this fund to finance future publications.

The Research Fund was set up in 1996 with funds derived from part of the old Bequest Fund which was closed with the intention of financing future grants for entomological research which would be authorised by Council but not so narrowly defined as those made by the Hering Fund.

## 10. Grants

Grants of £636 were paid from the Hering Fund and of £1,713 from the Research Fund of which £1,080 relates to the year ended 31 December 2000.

A. J. PICKLES

### BENHS RESEARCH FUND REPORT FOR 2000

The sum available for grants was £2500, and three applications were received. Three awards, totalling £1080, were made as follows:

1. Mr D.J. Mann, £440, to enable visits to be made to major museum collections in the UK to collect data and check identifications of British Scarabaeoidea and *Meloë* species of the subgenus *Eurymeloë*. These visits are to support work on the distribution and taxonomy of these beetles and to enable the production of identification keys.
2. Dr M.E. Archer, £395, to support museum visits to check identifications of species in the genus *Chrysis* (Hymenoptera: Chrysididae), the main purpose being to find a solution to the problem of species recognition in this taxonomically difficult genus.
3. Professor M.G. Morris, £245, as a further contribution to museum visits necessary for the completion of his work provisionally entitled 'True Weevils, part 1' in the *Handbooks for the Identification of British Insects* series.

The Research Fund panel is disappointed and puzzled by the low level of interest in these grants. For the third year running the Fund has been undersubscribed. At a time when the government's biodiversity initiatives are encouraging surveys of insects the length and breadth of the UK, these grants would seem tailor-made to support such work. Perhaps there is already sufficient funding in this area? All three projects funded this year have been taxonomic and the Society is pleased to be able to make a small contribution to the support of this financially neglected area of British biology. Consideration was given to the transfer of some of the cash available this year to the Hering Fund which was oversubscribed. However none of the Hering Fund applications seemed appropriate for Research Fund awards and it was thought important to keep the two funds separate. The surplus from this year's awards will be added to that available next year.

A report has been received from Dr A.J.A. Stewart who was given a grant in 1998 to assist with the collection, collation and computerisation of data on the distribution of Auchenorrhyncha in Britain. Four thousand one hundred records

were processed in 45 hours, a processing time twice as long as that anticipated. (A follow-up grant was awarded in 1999 to allow a further four thousand records to be processed.) Two visits were made to the Natural History Museum for extraction of data from the British holdings of Auchenorrhyncha. Survey work was concentrated on eleven sites within the South Downs AONB with samples taken by sweep net or suction sampler. All Hemiptera and Coleoptera were retained for subsequent identification. All non-Auchenorrhyncha records will be sent to the appropriate recording schemes. A further progress report on this project is due in 2001.

Professor M.G. Morris has delivered a draft of his work 'True Weevils, part 1' to the editor of the *Handbooks for the Identification of British Insects*. The manuscript included mock-ups of the text figures drawn by the author and habitus drawings of selected species made by John Read. Assuming the work is approved by the referees it could be published in 2001. This work involved 22 visits to the Natural History Museum, some with overnight accommodation, and the costs greatly exceeded the amount originally awarded to Professor Morris. In respect of this, and of the delivery of the draft manuscript, the Research Fund panel decided to make a further award to Professor Morris. This is reported above.

The Council invites applications for future awards in the fields of insect taxonomy, field biology and conservation in the British Isles. Applications should be sent to the Society's Honorary Secretary (from whom further details can be obtained) before 30 September in any year.

JOHN MUGGLETON

#### PROFESSOR HERING MEMORIAL RESEARCH FUND

The Committee agreed to make two awards from the Fund for the year 2001. Mr Bob Heckford was granted the sum of £400 to support a research project on the taxonomy of Southeast Asian Gelechiidae. The work is to be carried out on the rich holdings of Southeast Asian Gelechiidae in the Natural History Museum, London. This study will help improve our knowledge of the poorly known gelechiid fauna of an area situated between the better researched Palearctic and Australasian regions. The project is being undertaken in conjunction with Dr Klaus Sattler and the results will have the extra value of contributing to Dr Sattler's world catalogue of the Gelechiidae.

The Committee awarded £600 to Dr Sergej Sinev, Zoological Institute, Russian Academy of Sciences in St Petersburg, to further his work on the Momphidae and Agonexidae for the *Microlepidoptera of Europe*. The funds will enable Dr Sinev to make a two-week visit to the Natural History Museum, London, to study type specimens and representatives of certain type species otherwise unavailable to him.

I was able to report on the initial results of the work of Professor Rimantas Puplis, Vilnius Pedagogical University, last year since his visit took place prior to the AGM of the Society. Professor Puplis received a Hering award last year to support field work in Ecuador on leaf-miners. The specimens he collected from the Amazon basin in Ecuador are currently being studied and new species are being described. The findings are shedding new light on the diversity of the leaf-mining family Nepticulidae, a family of Lepidoptera that appears to be more diverse in the tropics than was appreciated previously.

A report has been received from Mr Martin Corley of Faringdon, Oxfordshire, who also received an award last year to assist him to make corrections and additions to the list of Portuguese Microlepidoptera. The support enabled him to visit the

Muséum National d'Histoire Naturelle in Paris to examine Portuguese Microlepidoptera in collections made mainly at the beginning of the 20th century. Much detailed work was undertaken and many changes to the list have been made as a result of the visit.

The Hering Fund Microscope remains on loan to Mr Peter Skidmore, who has, for some years, been completing the illustrations for the long awaited book on bees by Mr George Else. Eight hundred drawings have been executed. Minor corrections and a few extra drawings are currently being made. The book is expected to be finished during the course of this year.

I cannot close this report without referring to the loss, very recently, of Lt. Col. Maitland Emmet. He was the previous and long-standing Honorary Secretary to the Hering Fund, stepping down from the position in 1984. His wonderful work on Lepidoptera, particularly on leaf-miners, is well known. But it seems appropriate here for me to remind Members of the Society of the considerable contribution he made to the functioning of the Hering Fund. The effective running of the Fund during the time he was Secretary is evident from the clear and elegantly written reports and letters filed in the archives. Now, as during the time Maitland Emmet was Secretary, the Fund enables people often with limited resources to get work done. Frequently, what is achieved exceeds considerably what might be expected from the size of the awards we are able to make.

I am grateful to my colleagues on the Committee for their work in assessing the applications to the Fund.

MALCOLM SCOBLE

### LIBRARIAN'S REPORT

This year steady progress has been made with the journal-binding project. Two batches were dealt with and the results are very impressive. These included: *AES Bulletin*, *Bollettino dell Associazione Romana di Entomologica*, *Bulletin of the Entomological Society of Canada*, *Bulletin Mensuel de la Société Linnéenne de Lyon*, *Antenna*, *Institut Royal des Sciences Naturelles de Belgique Bulletin*, *Société Jersiaise Annual Bulletin*, *The Canadian Entomologist*, *The Coleopterist*, *Derbyshire Entomological Society Journal*, *Entomologische Abhandlungen*, *Entomofauna*, *Entomobrochure*, *Entomologica*, *Entomologica Scandinavica*, *Journal of the Bombay Natural History Society*, *Entomops*, *Fragmenta Entomologica*, *Fragmenta Faunistica*, *Entomological Review*, *Field Studies* and *Graellsia*.

In August I chaired a successful meeting of the Library Committee at the Pelham-Clinton Building. One of our aims was to price the duplicate books for sale. This was achieved, and it was decided that these items should be offered for sale to members in the coming year. The sale of duplicate journals was also considered. These items were priced and it was decided that their sale would take place at the Annual Exhibition. A successful sale was subsequently held, raising £560. This will augment the library budget for new titles and be used in the coming year. In addition, a comprehensive list of new titles for purchase, covering most of the larger insect orders, was drawn up at this meeting.

In October I represented the Society at the first conference of Entomological Libraries and Information Network (ELIN), entitled "Insect Information: From Linnaeus to the Internet". This was a three-day event held at the rooms of the Royal Entomological Society of London, hosted jointly by the RES and the Natural History Museum, London. I have prepared an article on this very interesting and useful conference, which should appear in our *Journal* shortly.



In November I met a representative from our bookbinders, Riley, Dunn and Wilson, at the library to discuss conservation of leather bindings. This issue was raised at the ELIN conference and is a subject I have been getting increasingly concerned about. Those of you who have visited Dinton Pastures over the past year may have noticed a deposit of red dust on the shelves around certain of our older journals. I was informed that this is what is known as "red rot". It is comprised of debris from disintegrating leather spines etc., due to their age. Fortunately we have caught it in time as little if any long-term damage has occurred. The answer is to apply a dressing to the leather to re-hydrate and lubricate it. Once a sample of a suitable leather dressing had been supplied I undertook some experimentation on application methods and rates and have now commenced a systematic programme of treatment for all our leather bindings. This will take a considerable time to complete, due largely to the number of such items on our shelves and the care that has to be exercised.

Earlier in the year I received a request from a member for the loan of slides showing insects of various orders for use during a lecture. During my searches for suitable items I was impressed by the quality and comprehensiveness of our slide collection, a resource I was previously not fully aware of. I mention this now to publicise our slide collection and draw members' attention to this resource. Andrew Halstead has clearly put much time and effort into its sorting and storage over the years.

I am pleased to report that the computer is functioning well. The Zip drive purchased last year is a real boon when it comes to performing full systems back-ups. Peter Verdon has optimised our file storage space, enabling us to get the best from the system.

John Muggleton has again been a great help by sorting and logging new receipts of journals to the library. Lastly, I would like to thank John Bradley, Gavin Boyd, David Green, Bernard Verdcourt, Stephen Miles, John Muggleton, Matthew Smith, Peter Chandler, Keith Alexander, Roger Key, Malcolm Scoble, Ted Wiltshire, Andrew Foster, Michael Archer, Martin Harvey, Leonard McLeod and Mr P Carrera for donations of books and journals over the period.

IAN SIMS

## CURATOR'S REPORT

There have been fewer events affecting the collections in the past year so a shorter report can be given than last time.

The changes to the layout of the collections room following disposal of surplus cabinets were completed early in the year and this has resulted in more space being available to facilitate use of the collections during Open Days and Workshops. Sales of storeboxes are continuing, but there are no further cabinets immediately available for sale.

The principal acquisition has been a donation of European macro moths by Barry Goater. This has been directed towards adding species not represented in the British collections or in the Torstenius collection of Scandinavian Lepidoptera. No attempt was made to integrate it with the Mackworth-Præd collection of European moths, which contains many British species.

This collection has been laid out in three Hill units on the basis of a short series of each species and altogether comprises nearly 1700 specimens of 797 species. The layout follows the European Lepidoptera checklist. Space has been allocated and

labels provided for additional species not otherwise represented in the Society's collections and donations of any of these by members would be welcome. I am especially grateful to Barry for his kindness in providing these specimens, which have been selected prior to the donation of his collection to Copenhagen. I also thank Peter Baker for rapidly repapering the drawers used for this layout.

Miscellaneous specimens have been donated by Graham Collins, Jonty Denton, Peter Dyte, David Gibbs, Andrew Halstead, Ian Sims and Bernard Verdcourt. I am grateful to them for this continuing interest in building the collections.

Determination of recent accessions by specialists has continued, in particular Trichoptera by Peter Barnard and Neuroptera by Colin Plant. Jonty Denton has continued to assist in this respect with the Coleoptera. There has also been some recent activity with the necessary parts of Eric Bradford's collections; Brian Gale has made a start on sorting the leaf mine collections and David Gibbs has volunteered to catalogue the micro moth genitalia slides.

One of the least well represented groups in the Society's collections is the parasitic Hymenoptera as we only have about a thousand specimens, most of which are either undetermined or were named many years ago. I am indebted to David Notton for spending a day sorting these specimens into families and the Ichneumonidae, which predominated, into subfamilies. Relatively few have so far been determined or revised at the species level but now that this basic sorting has been completed, arrangements are being made to make some progress on this in the near future.

Two further 15 drawer units of the same design as those obtained in 1999 have now been ordered and these will be used to provide a new layout of the Heteroptera and Homoptera, the only major groups of which there has not yet been any recent updating of the arrangement. It is anticipated that this will follow the new Hemiptera checklist, of which publication is expected in the near future.

In the previous year I was invited to represent the Society on the Insect Collection Managers group. This group, which has existed for nearly ten years, includes the national and local museums with major insect collections and meets annually to discuss matters of mutual relevance. Meetings are held in turn at the institutions involved and include the opportunity to view their collections. The 2000 meeting, which I attended, was held at the Ulster Museum in Belfast. Matters discussed included several of interest to the Society, among them storage and conservation of collections, pest control, cataloguing and databasing, loans and thefts. It is anticipated that I will attend the future meetings of this Group and the Society has been asked to host the 2001 meeting of the group.

Success in overcoming false alarms has continued, as there have been no callouts in the past year despite the occasional spider being encountered in the building. With yet another change in air conditioning contractor, there will hopefully be good future reports in that area too!

PETER CHANDLER

## EDITOR'S REPORT

Publication dates for the first three issues of volume 13 (March, July, October) were broadly the same as for volume 12 but unfortunately slippage with issue 4 meant it was not published until January (and distributed in February 2001). Sufficient material was available to sustain a total page number of 248 (average 64 pages per issue) but several of the articles were large (around 25 pages).

As well as reports of Society Indoor and Field meetings, the Annual Exhibition report and Officers' reports, volume 13 included 16 articles (1 fewer than 1999 and 8

fewer than 1998) and 19 short communications (4 fewer than 1999). Volume 13 also included an illustrated report on the Annual Exhibition published in the issue immediately after the event. There were 5 articles on Lepidoptera, 4 on Diptera, 2 on Coleoptera, 2 on Hymenoptera, 1 Hemiptera paper, 1 on Acari and 1 on Orthoptera. The Orthoptera paper by G.B. Collins reports the results of field studies first begun in 1941 – this must be some sort of record! As in previous years this seems a reasonable balance across the Orders and probably reflects the interests of the Members although some groups are still not covered at all. I continue to welcome more contributions on conservation matters and I would also welcome and encourage more formal reports from groups such as County Moth recording schemes, as well as BWARS and Dipterists' Forum. I am also always in need of short communications of all sizes.

The quality of the articles and short communications submitted has been high, both in presentation and content. I am particularly pleased to have so many articles in which species newly recognised in Britain are published – so combining good taxonomy and enthusiastic fieldwork. Many authors are also encouraged to publish their studies in the *Journal* because of the quality of the final product. However, the trend of lower numbers of submitted articles and other material is worrying (and is not just a problem for our *Journal*). Several of the articles this year have been large and without these the individual issues might have been smaller. Some might say that without these large articles we would be able to publish more, smaller, varied contributions in each issue – but we simply do not have them to publish. I hasten to add that the regular contributors are always very welcome! Indeed without their constant output the *Journal* (and other UK journals?) would be barely viable. There remain plenty of opportunities for other Members to report the results of their fieldwork and studies.

I would like to again take this opportunity to thank all those who have given their time in assisting the *Journal* in the past year, not only in writing articles, compiling the Annual Exhibition reports (a singularly thankless task) but also in reviewing others' contributions, proof-reading and all other aspects that help timely production.

MIKE WILSON

## THE 2000 PRESIDENTIAL ADDRESS – PART 1 – REPORT

ERIC PHILP

*6 Vicarage Close, Aylesford, Kent ME20 7BB*

The reports presented by the other officers give some idea on how much hard work is involved in the running of the Society and I will not dwell on their individual tasks as these have already been adequately reported. However, I doubt if any of these reports really convey just how much work and dedication that these officers give to the Society, and it is only from my relatively easy and figurehead post that I have been able to appreciate this.

John Muggleton, our rather unobtrusive secretary, is always there with efficient handling of all paperwork and administration matters, and with gentle reminders to me, and I am sure to other officers and council members, of tasks that have to be done. Our treasurer, Tony Pickles, in a very quiet and efficient way has managed our



finances, which remain in a very healthy state. Roger Hawkins and Andy Godfrey have again ensured that membership matters are dealt with efficiently and promptly. Mike Wilson has expertly edited four parts of our *Journal* to a very high standard of which we can all be proud as a fine advert for the Society. Peter Chandler has again put in a lot of time at Dinton Pastures, looking after and curating the collections, and has also been involved in a lot of time-consuming correspondence about the servicing of the air conditioning, or lack of it, at our headquarters. Ian Sims has shown bounding enthusiasm over the care of, and on new acquisitions to, our library, including the efficient disposal of some duplicate material. Ian McLean is another stalwart who goes efficiently about his work as indoor meetings secretary with another programme of interesting and varied speakers, and a series of very popular workshops. As lanternist he is always present at the indoor meetings in London and also at the Workshop meetings at Dinton Pastures, but one task that will probably not be mentioned elsewhere is of him housekeeping at our headquarters with tasks such as scrubbing the toilet floor. Just one of many tasks that usually get done unnoticed.

Gavin Boyd has completed another exceptional year as sales secretary, the new edition of *British Hoverflies* being responsible for a lot of his sales, and his time. Gavin also stood in as minute secretary at one of the committee meetings. Minutes for the indoor meetings have again been taken very efficiently and painstakingly by Andrew Halstead, these contributing to a recorded history of the Society. Stephen Miles and John Muggleton kindly took the minutes on the few occasions when Andrew was not available. Michael Simmons again efficiently organised the Annual Exhibition and Annual Dinner. The attendance at the Exhibition was a little down, but to me this was a great attendance when one considers that half the country was flooded at the time and very few trains were running. The Dinner was again a very enjoyable evening.

John Phillips has again represented the Society on conservation matters and David Young has done sterling work in the dispatch of journals and notices to members. Paul Waring organised a full and varied programme of field meetings, an important side of the Society, particularly for members who do not live in or near London or Reading. I apologise for not mentioning all the officers and committee members, but I can assure the audience that all have contributed to the success of the Society and it has been a pleasure and a privilege to work with them over this last year. Without all their work the Society could not function.

At the end of the year, two members, namely Dr P.E.L. Viette and Mr D.H. Walker, completed fifty years continuous membership of the Society, and were elected Special Life Members.

Sadly, during the course of my Presidential year I have had to announce the deaths of seven members. Mr H. Short from Bordon in Hampshire was interested in Lepidoptera and had joined the Society in 1974. Sir H. Cripps from Newport Pagnell in Buckinghamshire was also interested in Lepidoptera and had joined in 1947. Mr W.A.A. Cox, a Special Life Member from Bromley in Kent, again interested in Lepidoptera, had also joined the Society in 1947.

Professor Sir Cyril Clarke joined the Society in 1951. He was a medical man and a Past President of the Royal College of Physicians. In the medical field he will be remembered for his discovery of a treatment for the prevention of rhesus haemolytic disease which has since saved the lives of many new-born babies. This discovery can be traced back to research he carried out with the late Philip Sheppard on mimicry in swallowtail butterflies, a true example of scientific serendipity. Sir Cyril had a lifelong interest in entomology and was a member of this Society for 49 years. He was

one of the very few people to have bred English stock of the large blue butterfly, *Maculinea arion* L., in captivity. From 1959 he ran a very large moth trap in his garden at Caldý in the Wirral and from this collected a unique set of data which enabled him to chart the dramatic decline of the melanic form of the peppered moth *Biston betularia* (L.) over the last three decades. Future students of evolutionary biology will be grateful to him for having the foresight to record this phenomenon.

Dr John Vernon Banner was a Special Life Member and joined the Society in 1942. He lived in Croydon before the First World War and, after qualifying at medical school, moved to Brighton to practise during the early 1930s. "Jack" Banner continued to practise in Brighton until about 80 years old, the only break being due to the Second World War when he served in India. He gained an exceptional reputation as a caring doctor of the old school. His entomological reputation follows that of his life-long friend Guy Botwright, whose death I also have to report, as they often collected Lepidoptera together. He spent more than 60 years, and many gallons of sugar, hunting the crimson underwings in Sussex – his only success was the discovery of a transient colony of *Catocala promissa* (D. & S.) at the well-known Hog Wood (which straddles the Surrey/Sussex border) during the early 1950s.

Guy Botwright was another Special Life Member. He first joined the Society in 1919, later resigned in the 1930s and rejoined in 1962. He was born in 1897 and died in his 103rd year. In 1914 he joined the Army and fought on the Somme; he was later wounded and invalided out. For his service in the First World War he was awarded France's highest decoration the Légion d'Honneur. He worked in the city and was given the Freedom of the City of London a few years ago. For many years he was Honorary Secretary of the Guinea Pig Club formed for badly burnt Second World War airmen. He started collecting butterflies and moths in 1912 and was still recording Sussex Lepidoptera in 1993. He spent much time in the company of his friend "Jack" Banner collecting moths in haunts well known to entomologists of earlier generations but now mostly lost to us. His last years were passed in a retirement home but renewed interest in the First World War led to him being in much demand for his reminiscences of the war and members may have seen TV interviews with him.

And finally, A. Maitland Emmet who died just three weeks ago [3 March 2001] and had been a member of the Society since 1965. Maitland Emmet was a leading authority on European Microlepidoptera and was editor of the part-finished standard work, *The Moths and Butterflies of Great Britain and Ireland*. He was also the editor of the very useful *A Field Guide to the smaller British Lepidoptera*, and was the author of *The Scientific Names of the British Lepidoptera – their history and meaning*. He will be sorely missed, particularly by fellow microlepidopterists.

We have already stood in memory of these gentlemen at previous meetings so I will not ask you to do so again.

This brings to an end my year as President, a post in which I feel very honoured to have served. I have one regret, and one observation that I would like to make. The regret is that the tea and biscuits that used to precede the meetings have moved on with the times and we now have a machine that serves plastic coffee in plastic cups. My observation is that one year goes all too quickly and I was just beginning to get used to the procedure of being President when the year has gone, and I am out, a feeling that some Past-Presidents have also expressed. I would like to see consideration given that at some future date the term of a President could be raised to two years. I finish with thanks to the officers, committee and all members for a most enjoyable year.

## BENHS INDOOR MEETINGS

11 July 2000

The President Mr E. PHILP announced the death of a Special Life Member, Sir C. H. Cripps who had joined the Society in 1947.

Mr R. A. JONES showed a specimen of *Cleptes semiauratus* (L.) (Hymenoptera: Chrysididae), collected at the edge of a railway line at Chiswick Park, TQ203787, 30.vi.1999. This small blue- and pink-ruby tailed wasp is nationally scarce (Notable B, hereafter Nb). It is a very local parasitoid of gooseberry sawfly, *Nematus ribesii* (Scop.), which is a common pest of gooseberry and redcurrant. Once regarded as quite widespread, *Cleptes semiauratus* appears to have declined dramatically in recent years and is now rather uncommon.

Mr R. D. HAWKINS showed two live adult specimens of a leaf beetle *Chrysolina varians* (Schaller) (Coleoptera: Chrysomelidae) found as larvae on *Hypericum perforatum* L. on 24.vi.2000 near Boulogne, France. The larvae are brown in colour but the pupae are orange-yellow and match the flower buds of the host plant. One beetle shown had recently emerged and was still showing the colour of the pupal stage.

Mr A. J. HALSTEAD showed some larvae of the bryony ladybird, *Epilachna argus* (Geoff.) (Coleoptera: Coccinellidae). This species, which feeds on the foliage of white bryony, *Bryonia dioica* Jacq. was first discovered in Britain at West Molesey, Surrey in 1997. The larvae shown were collected in the grounds of Hampton Court Palace, Middlesex on 5.vii.2000. Mr Halstead reported that he had also recently found larvae at RHS Garden, Wisley and in Woking Park, Surrey.

Mr E. PHILP showed a publication called *The Bookmark Catalogue*. This is a ring-bound loose-leaf catalogue and he suggested this might be a suitable means of arranging a taxonomic key. The loose-leaf binding would allow revision and details of new species to be added in the appropriate places in the key.

The following persons have been approved as Members by the Council: Dr Christopher F. Hinks, Mr Nicholas P. Hubbard, Mr David M. Scarse and Mr P. John Worth.

Mr R. UFFEN reported seeing a clouded yellow butterfly laying eggs on goat's rue, *Galega officinalis* L. at Hounslow Heath, Middlesex on 25.vi.2000. He had also seen a worn humming-bird hawkmoth laying eggs on bedstraw at Croxley Common Moor, Hertfordshire on 27.vi.2000.

Dr I. F. G. MCLEAN spoke on the history and fauna of Chippenham Fen NNR, Cambridgeshire. He had made his first visit to the fen in 1976 and it has become his favourite site. Chippenham Fen is an ancient wetland at the margin of the East Anglian Fen Basin. It is in a shallow valley with springs feeding water into former depressions which developed as fens that later coalesced in a large single expanse of fen. Until the late 18th century the fen was little changed by human activities but drainage was begun after 1790 and two woods were established. Since then drainage pressures have increased and allowed tree and scrub invasion of the dryer areas. The former huge area of wetland in the East Anglian Fen Basin is now reduced to Chippenham Fen, Wicken Fen and Woodwalton Fen—all NNRs. Other fens survive elsewhere in East Anglia in river valleys, such as Tuddenham Fen, and in the Norfolk Broads. Chippenham Fen is now managed for nature conservation. The paths are regularly cut to maintain areas of short vegetation. Some parts of Forty Acre Wood have been coppiced recently and parts of Poor's Fen have been cleared of scrub. The central fen compartments are managed by cutting on annual or longer rotations,



while ditches are cleared of accumulated silt. The North Meadow, with wet fen meadow and drier chalk grassland on the higher part, has been both cut and grazed in recent years.

The Fen has a rich assemblage of plants, insects, birds and other animals. Birds include water rail, snipe, woodcock, reed and sedge warblers, but nightingales have not been heard or seen since the 1970s. Plant life includes characteristic fen plants such as common reed, *Phragmites australis*; saw sedge, *Cladium mariscus*; purple moor-grass, *Molinia caerulea*; hemp agrimony, *Eupatorium cannabinum*; alder, *Alnus glutinosa*; willows, *Salix* spp. and purging buckthorn, *Rhamnus cathartica*. A notable fen plant is the Cambridge milk parsley, *Selinum carvifolia*, which is known at only two other sites in Britain. An extensive list of invertebrates has been made, although Chippenham is less well recorded than Wicken Fen. Notable moths include the silver barred, *Deltote bankiana* (F.) and the reed leopard, *Phragmataecia castaneae* (Hübner). Other highlights are the spider *Clubiona rosseae*, the silver fly *Parochthiphila spectabilis* (Loew), a tiny crane fly, *Tasiocera collini* Freeman (only known in Britain from Chippenham Fen), the musk beetle, *Aromia moschata* (L.), nests of the hornet *Vespa crabro* L. and many other RDB species.

Chippenham Fen is an SSSI, a Ramsar site (since 1992), an NNR (since 1993) and is a candidate SAC. These national and international designations are crucial in combating threats to the future water supply to the fen, both in terms of quantity and quality. During dry periods water can be supplied from a borehole via a pipeline into three ditches in the fen to compensate for a lowered water table because of water abstraction. This is not as effective in keeping the fen wet as by natural springs and there is a danger that peat away from the ditches will become dryer, causing changes in vegetation and fauna. Chippenham is now surrounded by intensive arable farmland which is a significant barrier to the dispersal of species to and from Chippenham and other surviving fens.

Further information about species occurring at Chippenham Fen, their requirements and management is welcomed by English Nature, who manage the site. Anyone wishing to record at Chippenham Fen should obtain permission from Mr N. Sibbett, English Nature, Regent House, 110 Northgate Street, Bury St Edmunds, Suffolk, IP33 1HP. Tel 01284 762218. Email: [suffolk@english-nature.org.uk](mailto:suffolk@english-nature.org.uk)

## 12 September 2000

The President Mr E. PHILP announced the death of Dr J. V. Banner who had been a member for 58 years.

Mr E. PHILP showed a live adult of the cobweb spider *Pholcus phalangioides* (Fuesslin) (Araneae: Pholcidae). Mr Philp commented that although this was a common species it was rarely recorded on field meetings. In this country it occurs in cellars, outbuildings and often in public toilets. A dot-map showing the present-day distribution of the species in Kent was also shown. This map, Mr Philp jokingly commented, almost plotted the distribution of public toilet habitats for this species in the county.

Mr R. D. HAWKINS showed a draft copy of the Field Studies Council's AIDGAP publication, "A Key to Springtails of Britain and Ireland" by Steve Hopkin. Also exhibited by Mr Hawkins was a larva of the sawfly *Tenthredo scrophulariae* L. (Hymenoptera: Symphyta). This had been found on water figwort *Scrophularia auriculata* L. at Bletchingley, Surrey on the previous day, the 11.ix.2000.

Mr G. BOYD showed a copy of the new hardback edition of the Society's publication, *British Hoverflies*. This includes copies of the second and third supplements bound in at the back, all for the same current book price.

The following persons have been approved as Members by the Council: Mr M. J. Ellis, Mr I Kimber, Miss V. Mands, Mr S. C. Rogers and Dr T. M. Whitaker.

Dr D. HACKETT presented The Brad Ashby Memorial Lecture, Finding London's Insects. In his introduction Dr Hackett spoke about how he inadvertently became a professional entomologist. This led to his first research being conducted in Sudan, where he studied the depredations on cotton plants of the scarce bordered straw moth *Helicoverpa armigera* (Hübner), and the cotton whitefly which accounted for 50% of the insecticidal sprays used at that time. Further work was carried out on other moth pest species, both in Sudan and Tanzania. All of these experiences were feeding his continued appetite for studying insects. Switching to London's insects, aspects of the life-history of the buprestid beetle *Agrilus panonicus* (Piller & Mitterpacher) were discussed, including the fact that on emergence from the old oak trees that support it, this species causes a characteristic D-shaped hole to be formed. A distribution map illustrated the fact that Hampstead Heath and Epping Forest were localities for it. Slides of other Buprestidae species were shown, as well as a table illustrating typical habitats, seasons of occurrence and how they might be recorded. Additionally some occur as leaf-miners including the very rare *Anthaxia* species and *Aphanisticus*, which are both thought to occur in the London area.

One hundred or so remnant ancient woods occur in the London area, Highgate Woods being a notable site for deadwood beetles. Dr Hackett used a flight interception trap in these woods for his research; however these trapping methods could not be considered a universal panacea to find all species. Importantly, good observation of insects he considered essential, but special tools, although useful, were not a definite pre-requisite. Other notable dead wood sites in the London area were Epping Forest and Richmond and Hatfield Parks, the latter two sites being good for species such as the click beetle *Ampedus cardinalis* (Schiodte). Digging under tree bark was a recommended technique to find the larvae of many species; in this context he had found the larvae of stag beetles (*Lucanus cervus* (L.)) underground in oak boles on Wimbledon Common. The stridulations performed by the larvae of both the stag and lesser stag (*Dorcus parallelipipedus* (L.)) beetles were explained. A slide of the third stag beetle *Sinodendrum cylindricum* (L.) was shown illustrating the thoracic horn-like process, even though from his knowledge it did not occur in London, but in rural Hertfordshire. Within the London area, Broxbourne Woods was cited as a good site; from here an example of an eyed ladybird (*Anatis ocellata* (L.)) showing the condition of reflex bleeding was illustrated.

Turning to the butterflies, Dr Hackett informed the audience that he had even located eggs of purple hairstreak (*Neozephyrus quercus* (L.)) and that this species was now a resident of the Haringey area. Even emperor moths (*Pavonia pavonia* (L.)) had been found recently in London and assembling of the males had been achieved. One beneficiary of recent plantings of buckthorn (*Rhamnus cathartica* L.) by the Corporation of London around Highgate Woods had been larvae of brimstone (*Gonepteryx rhamni* (L.)) butterflies. In a rather less exotic situation in ditches on Walthamstow Marshes he had found larvae of the fly *Stratiomys potamida* Meigen although he had never seen the adults. A rather more notable woodland hoverfly, *Callicera aurata* (Rossi) had recently been found in a wood just outside Epping Forest, the first record for very many years.

Dr Hackett described how he was also working on a local Biodiversity Action project on eight sites in Waltham Forest, where he was analysing the percentages of

common species in comparison to the features of sites where they were found. In the woodland sites he had found smaller percentages of common species but many more rare ones compared to all of those found in the more open sites. He was also considering the Highgate Woods' beetle list in terms of species quality scores as a site that was of SSSI quality. In his conclusions he considered that urbanisation had not been good for insect species' distribution in London as so many species remain on its fringes having not penetrated the core.

### 10 October 2000

Mr PHILP remarked that on returning the *Pholcus* spider (exhibited on 12.ix.2000) to his home it had taken a *Tegenaria* sp. as prey. Dr McLean and Dr Muggleton confirmed that this was normal behaviour. There was some speculation as to whether the two species could co-exist together but Mr R. Hawkins confirmed that they did. Dr Key commented the *Pholcus* was a spreading species and that it had arrived on Lundy Island three years ago but it was not known how it had arrived there.

Mr J. S. BADMIN spoke briefly about a recent paper entitled "The Whiteflies of Europe and the Mediterranean Basin", by J. H. Martin, D. Mifsud and C. Rapisarda, which had been published in Volume 90 of the *Bulletin of Entomological Research*.

Dr R. KEY showed a copy of a publication from the English Nature Science series, number 35, entitled *Conservation of Invertebrates in England: a review and framework*, by Roger S. Key, C. Martin Drake and David A. Sheppard.

Mr R. SOFTLY reported two instances of moths apparently inhibited from flight by roosting exposed to a source of artificial light. By daylight on the 2.x.2000 he noticed a large ranunculus moth (*Polymixis flavicincta* (D. & S.)) on a front-garden fence immediately adjacent to a street lamp of the old-fashioned lantern type but having a bulb giving a brilliant white light. By coincidence a second similar moth a few hundred yards away was roosting in an identical situation. He checked one of these after dark and confirmed that it was in the full and close glare of the street lamp. Thereafter he visited the two sites daily. One moth was no longer there on 7.x.2000, and the second disappeared on 9.x.2000. Others of the species had presumably flown on each intervening night, examples having turned up in Mr Softly's actinic trap on the nights of 2.x.2000, 4.x.2000 and 7.x.2000.

Mr DAVID BOYCE spoke about recent work on the ecology and conservation of the beetle *Carabus intricatus* (Coleoptera: Carabidae). He explained how this species became a candidate for this research programme, by the means of the UK Biodiversity Action Plan process and English Nature's Species Recovery Plan. This action plan had been running since 1995, having been started by Clive Turner and then continued by the speaker in conjunction with John Waters, supervised by English Nature's invertebrate experts. The objectives of the Biodiversity Action Plan for this species were for all habitats to have been surveyed by 1998, its ecology to have been determined by 2000 and for there to be self-maintaining populations by 2005.

The habitats for *C. intricatus* are rocky woods in which it runs about at night; it is flightless and as a spring breeder eggs laid at this time result in adults emerging in late summer and autumn. All its life stages can be completed in one year.

The distribution reflects the fact that it has always been considered rare, with Devon and Cornwall being the focus for its UK distribution. It was first found in 1811 by W. E. Leach, and a J. Reading once found 115 in the Plymouth area. There was a single record in the 19th century for Cornwall, mysteriously at Whitesand Bay, a totally unsuitable locality, by the same Mr Reading. F. Smith is said to have taken



it at Hawley, Hants. It was re-found on the southern edge of Dartmoor in the 1950s after a twenty-year gap. Recent records have included specimens taken in Somerset, Cornwall and other parts of Devon which reflect the fact that modern recording has become more systematic. Many earlier records were chance records at sugar or specimens taken during the day.

In 1994, 61 old sites were visited together with another 49 speculative sites. In both categories populations were found, the common factor being that the rainfall in all these sites is more than 60 inches annually. Four good populations are known and the speaker considered that recording effort was definitely a factor in its distribution. In Europe *Carabus intricatus* is considered rare, particularly so in the north-west, as Sweden, for example, only has two sites. It occurs in Greece and Turkey but is considered to be a more montane species in the Mediterranean area.

The species is most active as an adult from dusk to dawn during the period March to June. Two main techniques have been established for finding it. Searching during the winter in woodlands, and night searching in the spring, as this latter time is when this species is most active and when it can be found in good densities, feeding and mating. Pitfall trapping has usually been found to be ineffective. The larvae have been described but they are difficult to find; in the course of the project a few have been found on boulders and some under bark at night, and they are suspected of being mainly subterranean. Larval records are from July and August.

It occurs in sessile oak woodland, large oak trees and in mature beech woodland as in Bocconnock Park in Cornwall. Moist, shaded and mossy sites with boulders, bare ground and leaf litter emanating from small oak trees with closed canopies appear to be the optimum sites of occurrence. Of the sites known so far, other common factors are that they are near watercourses, are south-facing and share the habitat with the tree-slug *Limax marginatus* which is a food-source of the beetle. Another key factor appears to be the need for grazing of these woodlands to maintain their open structure, for any increase in bracken *Pteridium aquilinum* or brambles *Rubus* sp. appears to have a deleterious effect.

Finally Mr Boyce commented that a lot of the outlying sites for *Carabus intricatus* no longer appeared to support it, so thought would need to be given on how the species might be re-established on these sites.

#### 14 November 2000

The President Mr E PHILP announced the death of Mr W. A. A. Cox, a Special Life Member who joined the Society in 1947.

Mr R. D. HAWKINS exhibited a specimen of the lesser mottled grasshopper, *Stenobothrus stigmaticus* Rambur (Orthoptera: Acrididae) from Ambleteuse, Pas-de-Calais, France on 4.ix.2000. The locality was about 2 km inland from the coast north of Boulogne. In the British Isles this species is only found at a single locality on the Isle of Man and so this French locality is almost certainly the nearest site for this species to Great Britain.

Mr G. Boyd showed two specimens of the sawfly *Tenthredo scrophulariae* L. (Hymenoptera: Symphyta); a male from Lopham Fen, Suffolk on 10.vi.2000 and a female from Wilsons Pits, Northamptonshire on 15.vii.2000. Both specimens were collected from figwort (*Scrophularia* sp.).

Dr J. MUGGLETON gave details of attendance at the Annual Exhibition which had been held the previous year, and there were fewer exhibits. However, given the poor weather during the season, current floods and travel difficulties, he felt that little could be deduced from these figures.

Dr I. F. G. McLEAN, referring back to the previous meeting, said that he had found an adult female *Pholcus phalangioides* (Fuesslin) (Araneae: Pholcidae) in his house in Bampton, Cambridgeshire in October. Mr D. J. Henshaw, a visitor, said that *P. phalangioides* was very common in Waltham Abbey, Essex.

Dr JASON CHAPMAN spoke about monitoring insect migration using radar. Dr Chapman started by outlining the causes of insect migration. Classically migration involved insects moving from one habitat to exploit another and then returning. He cited the example of the painted lady butterfly, *Cynthia cardui* (L.), which migrates from North Africa to Europe when its food source dies out in Africa and then migrates back to Africa as it cannot survive the winter in Europe. Smaller-scale movements of insects occur in the United Kingdom when food sources are exhausted and, although these do not involve return, they are still referred to as migration. Aphids and their enemies were examples of this type of migration.

The traditional method of monitoring migration is by the use of suction traps set at 12 metres but these are limited to collecting small insects. It is therefore difficult to monitor large insects and those that fly at high altitude. The advantage of entomological radar is that it can monitor insects at all altitudes and without disturbing them.

Most of the work considered in the lecture was carried out by the Natural Resources Institute Radar Unit led by Professor J. Riley. The work originated in the tropics using scanning radars and observations on grasshoppers, locusts and the armyworm moth. As well as detecting migration, radar can also be used to estimate the duration and distance of migrations. Scanning radar has problems in that identification of insects is difficult and analysis of the results laborious. To overcome these problems the Radar Unit has developed the use of a vertical-looking radar which works by emitting a plane-polarised rotating vertical beam. The apparatus has been in use since spring 1999 and can detect insects from 150 metres upwards in fifteen bands, each of 45 metres width. An insect flying through the beam sends an echo back and the characteristics of the echo can be used to identify the insect. Only insects greater than 1 mg in weight can be detected and at the greatest distances only the largest insects, so detection is dependent on distance and mass. Confirmation of which insects are being detected has been done by trapping with nets suspended from captive balloons.

The balloon traps showed that at 200 metres the majority of insects are aphids, followed by Diptera, Hymenoptera and other Hemiptera. Lepidoptera are hardly represented at this height although the diamond-backed moth, *Plutella xylostella* (L.), was found and a single specimen of the large yellow underwing, *Noctua pronuba* L. Of the larger insects found, carabid beetles were the most common and there were also some large water beetles.

The radar results showed that there was a good correlation between the aerial density of insects and the temperature at ground level. Of day-flying species the 8–16 mg class is the most common which suggests the presence of carabid beetles and hoverflies. Nearly all the largest insects detected by radar are night-flyers and so they are probably noctuid moths. A diurnal periodicity of aerial density has been observed with small peaks at dawn and dusk and the largest peak around midday.

The technique should prove useful for studying migrant Lepidoptera. Although observations on day-flying Lepidoptera are relatively easy, it is difficult to observe the nocturnal migrants and radar may allow questions about their movements to be answered. Dr Chapman used this year's movements of *P. xylostella* as an example. This well-known migrant microlepidopteran is a pest of brassicas. Enormous numbers of this moth arrived in Spitsbergen this year and it was interesting to know

if the same movement had also reached the UK. Light-trap records from the UK showed peaks in June and July which coincided with nights when the moon was full. Radar observations showed *P. xylostella*-sized targets in June and July which coincided with the light-trap peaks. The July peak was close to the time of the moths' arrival in Spitsbergen.

Dr Chapman concluded by saying that, having shown that the technique worked, there was now a need to improve the reliability of identifications and further work will be done to this end.

#### 14 December 2000

The President Mr E. G. PHILP announced the death of Sir Cyril A. Clarke who had joined the Society in 1951.

Mr E. G. PHILP exhibited some larvae of the stag beetle, *Lucanus cervus* (L.) (Coleoptera: Lucanidae), from a fence post in his garden at Aylesford, Kent; the leaf miner *Phytomyza hellebori* (Kaltenbach Rhabdidae) bred out from *Helleborus* sp. found at Longfield, Kent on 14.x.2000 and the snakefly (*Subilla*) *confinis* (Stephens) found in Orlestone Forest, Kent on 13.vii.1997. The latter two insects were both new to Kent.

Mr R. A. JONES exhibited some uncommon insects from Battersea Park in London. London's Battersea Park is, like many urban open spaces, primarily given over to utility close-mown grassland, ornamental shrubberies and exotic trees. However, it does have a few refugia, unmanaged for many years. During 2000, it gave up some of its secrets, which included a strange mixture of uncommon and unusual insects. These included: *Solva marginata* (Meig.) (Diptera: Xylomyidae) from a Malaise trap between 17.vii.2000 and 2.viii.2000. This is associated with old woods and probably breeds in dead timber of poplar trees; it is nationally scarce (Nb). *Rhagoletis meigenii* (Loew) (Diptera: Tephritidae) found on 19.vi.2000 and 17.vii.2000. This is associated with *Berberis*; one was taken on *B. thunbergii*, a garden shrub. The only other UK specimen is from 1897 and it was previously thought to be extinct in Britain. *Orchesia micans* (Panzer) (Coleoptera: Melandryidae), reared from fungus taken from a felled tree on 26.ix.2000. This is associated with ancient woodlands and is nationally scarce (Nb). *Anobium inexpectatum* Lohse (Coleoptera: Anobiidae). Swept on 17.vii.2000, it lives in dead ivy timber and needs old woods where ivy can grow old too. It is nationally scarce (Nb), but proving to be quite widespread and probably overlooked. *Trox scaber* (L.) (Coleoptera: Trogidae), found under a dead heron on 6.vii.2000. It breeds in dry carrion, a scarce resource in urban areas where carcasses are either found by cats, dogs, foxes or are cleaned away. *Cleptes semiauratus* (L.) (Hymenoptera: Chrysididae), taken in a Malaise trap between 17.vii.2000 and 2.viii.2000 and again between 2.viii.2000 and 24.viii.2000. It is a parasitoid of gooseberry sawfly (*Nematus ribesii* (Scop.)) and has declined of late. It is nationally scarce (Nb), but is established in central London. *Delomerista mandibularis* (Gravenhorst) (Hymenoptera: Ichneumonidae). This had been swept on 26.v.2000. Its life history is unknown and only a few specimens are known. *Ctenochares bicolorus* (L.) (Hymenoptera: Ichneumonidae). This was taken on the wing on 6.vii.2000. It is an African species, a parasitoid of *Chrysodeixis* and other noctuid moths. It also occurs around the Mediterranean, and in Australia and New Zealand. It is new to Britain and northern Europe.

The following persons have been approved as members by the Council: Mr P. A. Amies, Mrs J. M. Chandler, Mr P. J. Courtney, Mr M. L. Denton, Dr R. J. Dickson, Mr T. A. Flynn, Mr B. A. Gale, Mr K. J. Grearson, Dr G. A. Hazlehurst, Dr P. W. Lambdon, Mr S. Randolph, Mr J. G. Summers and Mr I. R. Thirlwell.



RICHARD JONES said that at this time, at the real turn of the century, he would like to nominate a British insect of the century. His nomination would be for *Volucella zonaria* (Poda) (Diptera: Syrphidae) for which the first British record was published in 1901, the first year of the century, and which had now spread throughout southern England.

Dr KEITH KIRBY spoke on the subject of 'Long-term changes in British woodlands—where have all the flowers gone?'. Dr Kirby's main theme was that while woodland habitat loss over the last fifty years was only too evident there also appeared to have been changes to the habitat that had survived. Old records did exist which should enable changes to the ground flora to be identified but some thought had to be given to how reliable those records were. All records depend on the effectiveness of the recorders and the circumstances, such as weather, at the time of recording. Studies show that there is a recorder effect and one needs to be sure what is real change and what is observer error. This problem is rarely referred to in publications. Woods were thought to be stable habitats but this is not necessarily so. There is a natural cycle of vegetation change but this may be masked as many herb species are long-lived. The woods we see today have a limited age structure due to past felling. Large-scale felling during the Second World War means that the woods, that have grown up since, now have a dense canopy and a reduced ground flora which contrasts with their appearance as young woods twenty years ago. The effects of changes in grazing by large herbivores need also to be taken into account. Large herbivores were probably common in woodland in the past but there has recently been a tendency to remove them. This has led to an accumulation of litter and a spread of bramble thickets. However, in southern England, an increase in deer is now reducing the bramble. The flora of Monk's Wood in Huntingdonshire was surveyed in the 1960s and, as there appear to have been changes, a new survey was undertaken. To avoid problems of misidentification this survey was restricted to eight species. Amongst the results it was found that large areas were now dominated by the wood sedge (*Carex sylvatica* Huds.) which had not been present earlier whereas dog's mercury (*Mercurialis perennis* L.), which was previously abundant, had declined throughout the wood. Nettles (*Urtica dioica* L.) had increased. It was suspected that these changes might be a result of grazing by muntjac deer (*Muntiacus reevesi*), although the abundance of nettles might suggest an increase in nitrogen levels. Evidence from Wytham Woods in Oxfordshire, where bramble has disappeared and grasses have appeared, also supports the theory that grazing by deer is having a major effect. At present it is not possible to judge whether nutrient enrichment and climate change are also playing a part. Some data from Wytham Woods show that nutrient levels have increased there. All in all there is a complicated pattern of changes and although species composition has changed, species richness has not. The problem then is how does one value one species against another? So some flowers have gone, but have been replaced by others and it is not, in the words of the song, the result of young girls picking them but rather animals eating them. Indeed conservation could be judged a success if once again people could go to the woods to pick flowers but without endangering them.

## 9 January 2001

Mr R. D. HAWKINS showed a large fungus gnat found at Hedgecourt Lake, Surrey on 14.x.2000. It was identified by Peter Chandler as *Keroplatus testaceus* Dalman. This species, which is associated with bracket fungi, has become more common in recent years.

Mr R. SOFTLY showed a spring usher moth, *Agriopsis leucophaearia* (D. & S.) taken in January in his Hampstead garden. It regularly first occurs there in January, despite the common name of the moth.

Mr R. A. JONES showed a specimen of the lygaeid ground bug *Metopoplax ditomoides* (Costa), swept from the old by-way, Cox's Walk, at Sydenham Hill Woods (TQ344732, VC17, Surrey) on 7.vi.2000. First recorded as British from a single specimen taken in Middlesex in the early 1950s, this characteristic bug was not found again until 1992, when it was recorded in Oxfordshire. Since then it has been recorded in several localities, sometimes in numbers. It feeds on chamomiles and mayweeds. It seems to be firmly established in the London area, and other specimens were found by the exhibitor on derelict ground at the River Wandle mouth (TQ254752, VC17, Surrey), 24.vi.1998, and a flowery railway embankment at Fulham Broadway (TQ257775, VC21, Middlesex), 5.viii.1999.

Mr R. K. MERRIFIELD showed a photograph of a crane fly, *Metalimnobia quadrimaculata* (L.) taken on the trunk of a dead beech tree, 13.v.2000, at Lords Bushes, Epping Forest, near Woodford, Essex. It is an uncommon species associated with dead wood in ancient woodland.

Mr A. M. DAVIS showed a specimen of the pyralid moth, *Sclerocona acutellus* (Ev.). There are less than ten records in Britain of this moth that was first discovered in 1988. It was originally thought to be an overlooked resident but specimens taken in Exeter in the late 1990s were thought to have possibly emerged from imported thatching material. The specimen exhibited was taken by Martin Love at West Wittering in June 1999 and was misidentified as *Nascia ciliaris* (Hübner). When the exhibitor corrected this error, he asked if there was any new thatch in the place where the moth was taken. There was a newly thatched cottage very close to the trap site which had used thatch imported from Hungary. The exhibitor suggested that other records of *Sclerocona acutellus* in Britain might have originated in this way.

Mr A. J. HALSTEAD showed the cocoon of a sawfly found on a shrub growing beneath a Scots pine at the RHS Garden, Wisley, Surrey. It is likely to be a sawfly of the Diprionidae family. These feed as larvae on the foliage of conifers and some species are pests of economic importance in forestry plantations.

Dr R. S. KEY spoke on "English Nature and Invertebrates". The Invertebrate Team at the Peterborough headquarters of English Nature is led by Roger Key, David Sheppard and Martin Drake. England is covered by 20 local offices, each of which has a member of staff who covers invertebrate matters, although that person is not necessarily an entomologist. English Nature has many aspects to its work which Dr Key summarised as follows:

*Site management objectives.* Investigations are undertaken to find out what habitat features are good for invertebrates so that this information can be incorporated into management plans. The Invertebrate Site Register continues to be added to, with the data being used for site management and planning purposes. About 30 new SSSI sites are declared each year. A review of existing sites is being carried out to see if they still meet the requirements for SSSI status. Some sites are being upgraded to National Nature Reserves or Special Areas of Conservation.

*Legislation.* English Nature is involved in the five-year reviews of the scheduled species listed under the Wildlife and Countryside Act. They also issue licences to trade in scheduled species, liaise with the police on wildlife matters, and have been involved with the recent Countryside and Rights of Way Act.

*Biodiversity Action Plans (BAPs) and Habitat Action Plans.* Some habitats, such as heathland, grassland, wetlands, grazing marshes and pasture woodland, are already recognised as habitats requiring protection. English Nature hopes to add



river shingle beds and brown-field sites to this list. There are currently 83 Biodiversity Action Plans overseen by English Nature. Some are stuck at the survey stage due to the difficulty of finding some of the very rare species. In conjunction with the Natural History Museum, English Nature has undertaken taxonomic studies on some of the extremely rare endemic British species to see whether they are good species. Most have turned out to be forms of other species and therefore not requiring Biodiversity Action Plans. Dr Key described some of the studies currently being done on invertebrates, such as the violet click beetle, the Lundy cabbage flea beetle, the fen raft spider and the ladybird spider. Grouped projects are also being undertaken for groups of similar BAP insects, such as moths, aculeate Hymenoptera and carabid beetles, or for localities such as the New Forest and the Isle of Wight.

*Agricultural projects.* Some of English Nature's funding is dedicated to agricultural areas and the general countryside, as opposed to conservation areas. Investigations are being carried out into the effects on invertebrate animals of avermectins and other chemicals in cattle dung. Similar investigations are being made into the effects of run-off from sheep dips.

*Communications.* Training courses are run for organisations such as the RSPB, police wildlife liaison officers and the Farming and Wildlife Advisory Group. Campaigns, such as veteran tree awareness, are carried out. Sets of slides of insects found in four types of habitat have been made available for sale through the Amateur Entomologists' Society. English Nature are often consulted by newspaper, radio and television reporters for comments on wildlife stories. Stories that are whipped up by the press, such as the almost annual scare stories about killer wasps or the ragwort peril, can be a problem and need turning to highlight the conservation angles.

*Things can go wrong.* Despite their best efforts some of English Nature's projects can go awry. *Panagaeus cruxmajor* (L.) is a BAP carabid beetle that has become scarce. A six-year BAP project had been stuck at the survey stage with five beetles being found at just one site in year one, with none since. Then the beetle was found in reasonable numbers in a new site last year but this site was inundated in the autumn floods. It remains to be seen if the beetle has survived. An earth bank at Gillkicker Fort was the only known site for a rare weevil. The listed building requires repairs that would involve removing the bank. In order to assess the scarcity of the weevil, English Nature surveyed the area and found that the weevil actually occurs along a 6 km stretch of the coast. This means the weevil cannot be used to save the earthbank and the other invertebrates it supports.



## WANTED: A NEW JOURNAL EDITOR

Compared to Tony Benn, who has retired after 50 years in the House of Commons, to give himself more time to devote to politics, just 4 years as Journal Editor seem rather insignificant. It does seem hardly any time since I talked myself into being Richard Jones's successor. The role has become more routine and a little less novel than it was at the start and I could so easily carry on for 10 years like Richard Jones. However, I have decided to try and spend more time on entomology — my entomology rather than that of others! While the Editor's role is not that time-consuming (perhaps a couple of evenings per week?) there are deadlines to be met if the Journal is to appear with some regularity. These will assume a higher priority than other entomological activities for a short time.

So, the Society will need to appoint a new Editor. A willingness to interact with the wider British entomological scene, to assist and encourage members (and non-members) to publish their findings would be a starting point for anyone who might feel interested. Naturally an interest in seeing manuscripts progress from submission to publication and deal with reviewers, typesetters and printers is essential. Computer skills and email are more or less essential tools now also. Some patience, diplomacy, some level of organisation and sense of humour would help too — (although it might be for others to say if I have shown any of these). It is worth remembering that others are always available to help and offer advice.

If anyone is at all interested in taking over as Editor then I would welcome the chance to discuss the possibilities; my email and phone number are inside the front cover.

MIKE WILSON

---

## NEW BRITISH BEETLES — SPECIES NOT INCLUDED IN JOY'S *PRACTICAL HANDBOOK*

The paperback version of the Society's publication *New British Beetles* is now out of print. I have a very small number of slightly sub-standard copies (damaged covers) which are offered to members at a price of £9 per copy (instead of £12) + £2 postage (UK).

The authors, Peter Hodge and Richard Jones, have been working for some time on a second edition. This will include details of a further 50 species which are (or were) known from Britain and which were omitted from both Joy's *Practical Handbook* and from the first edition of *New British Beetles*. The authors (addresses in Society membership list), would naturally be interested to receive details of any new discoveries. The second edition is unlikely to be available much before Spring 2002.

GAVIN BOYD (Sales Secretary)

**BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY**  
**VOLUME 14, PART 2, JULY 2001**

**ARTICLES**

- 65 The Diptera, Coleoptera and other Invertebrates recorded from oak sap-flows at Brayton Barff, North Yorkshire. A. GODFREY & P.W. WHITEHEAD
- 85 The Brown Hairstreak butterfly (*Thecla betulae* L.) in Ireland: an examination of its historical and current status. M. J. O'SULLIVAN
- 90 Advice on the reporting, licensing and identification of alien, or exotic, invertebrate plant pests. R. J. C. CANNON, P. W. BARTLETT & R. J. TUPPEN
- 92 *Xestia rhomboidea* (Esper) (Square spotted clay) (Lepidoptera): Request for information. D. YOUNG
- 93 Some behavioural observations on *Megaselia oxybelorum* Schmitz (Diptera: Phoridae), a new kleptoparasite of *Cercercis arenaria* (L.) (Hymenoptera: Sphecoidea: Philanthidae). C. POLIDORI, R.H.L. DISNEY & F. ANDRIETTI
- 96 *Ctenochares bicolorus* (L.), an African ichneumonid (Hymenoptera) found in Britain. R. A. JONES

**SHORT COMMUNICATIONS**

- 84 Notes on some wetland Lepidoptera in Surrey. J. S. DENTON
- 101 Letters to the Editor: Butterflies on dung

**PROCEEDINGS AND TRANSACTIONS**

Officers reports for 2000

- 103 Council report
- 105 Treasurer's report
- 111 BENHS Research Fund report
- 112 Professor Hering Fund report
- 113 Librarian's report
- 114 Curator's report
- 115 Editor's report
- 116 The 1999 Presidential Address — Part 1. Report. E. PHILP
- 119 BENHS Indoor Meetings July 2000–January 2001

**BOOK REVIEW**

- 99 The insects: An outline of Entomology by P.J. Gullan & P.S. Cranston. C. HODGSON

**ANNOUNCEMENTS**

- ibc Wanted: a new Journal Editor
- ibc 'New British Beetles' — species not included in Joy's 'Practical handbook'

